J. S. Horn

DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 361

# SURFACE WATER SUPPLY OF THE UNITED STATES

## 1913

## PART XI. PACIFIC SLOPE BASINS IN CALIFORNIA

NATHAN C. GROVER, Chief Hydraulic Engineer
H. D. McGLASHAN and F. F. HENSHAW, District Engineers

Prepared in cooperation with
THE STATE OF CALIFORNIA

WASHINGTON
GOVERNMENT PRINTING OFFICE
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# SURFACE WATER SUPPLY OF THE PACIFIC SLOPE BASINS IN CALIFORNIA, 1913.

## AUTHORIZATION AND SCOPE OF WORK.

This volume is one of a series of 12 reports presenting results of measurements of flow made on streams in the United States during 1913. Six of the reports for 1913 contain data for the year ending September 30, and the other six for the calendar year, as indicated in the table on page 10.

The data presented in these reports were collected by the United States Geological Survey under authority implied in the organic law (20 Stat. L., p. 394), which contains the following paragraph:

*Provided*, That this officer [the Director] shall have the direction of the geological survey and the classification of public lands, and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies of water supply for irrigation. Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources:

*Annual appropriations for the fiscal years ending June 30, 1895–1913.*

| | |
|---|---|
| 1895 | $12,500 |
| 1896 | 20,000 |
| 1897 to 1900, inclusive | 50,000 |
| 1901 to 1902, inclusive | 100,000 |
| 1903 to 1906, inclusive | 200,000 |
| 1907 | 150,000 |
| 1908 to 1910, inclusive | 100,000 |
| 1911 to 1913, inclusive | 150,000 |

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected and of the second kind on page 20.

Measurements of stream flow have been made at about 3,000 points in the United States and also at many points in small areas in Seward Peninsula and the Yukon-Tanana region, Alaska, and in the Hawaiian Islands. In July 1913, 1,388 gaging stations were being maintained by the Survey and the cooperating organizations in the United States and many miscellaneous discharge measurements were made at other points. In connection with this work, data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country, and will be made available in the regular water-supply papers from time to time.

## PUBLICATIONS.

A report has been prepared for each year embodying the stream-flow data collected during that year. An index to the reports containing stream-flow measurements prior to 1904 has been published as Water-Supply Paper 119.

Prior to 1901 gage heights and discharge measurements were published in water-supply papers or bulletins, and estimates of monthly discharge in annual reports; since 1901 both classes of data have been published in water-supply papers, and they are now being published in 12 parts, as shown in the following table:

*Papers on surface water supply of the United States, 1913.*

| Part. | No. | Title. | Year used. |
|---|---|---|---|
| I | 351 | North Atlantic coast basins | Calendar year. |
| II | 352 | South Atlantic coast and eastern Gulf of Mexico basins | Do. |
| III | 353 | Ohio River basin | Year ending Sept. 30. |
| IV | 354 | St. Lawrence River basin | Calendar year. |
| V | 355 | Upper Mississippi River and Hudson Bay basins | Year ending Sept. 30. |
| VI | 356 | Missouri River basin | Calendar year. |
| VII | 357 | Lower Mississippi River basin | Do. |
| VIII | 358 | Western Gulf of Mexico basins | Year ending Sept. 30. |
| IX | 359 | Colorado River basin | Calendar year. |
| X | 360 | Great Basin | Year ending Sept. 30. |
| XI | 361 | Pacific coast basins in California | Do. |
| XII | 362 | North Pacific coast basins | Do. |

A list of reports containing stream-flow data is presented in the following table:

*Stream-flow data in reports of the United States Geological Survey.*

[A=Annual Report; B=Bulletin; WS=Water-Supply Paper.]

| Report. | Character of data. | Year. |
|---|---|---|
| 10th A, pt. 2 | Descriptive information only | |
| 11th A, pt. 2 | Monthly discharge | 1884 to Sept., 1890. |
| 12th A, pt. 2 | do | 1884 to June 30, 1891. |
| 13th A, pt. 3 | Mean discharge in second-feet | 1884 to Dec. 31. 1892. |
| 14th A, pt. 2 | Monthly discharge (long-time records, 1871 to 1893) | 1888 to Dec. 31, 1893. |
| B 131 | Descriptions, measurements, gage heights, and ratings | 1893 and 1894. |
| 16th A, pt. 2 | Descriptive information only | |
| B 140 | Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years). | 1895. |
| WS 11 | Gage heights (also gage heights for earlier years) | 1896. |
| 18th A, pt. 4 | Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years). | 1895 and 1896. |
| WS 15 | Descriptions, measurements, and gage heights, for eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas. | 1897. |
| WS 16 | Descriptions, measurements, and gage heights, for western Mississippi River below junction of Missouri and Platte, and western United States. | 1897. |
| 19th A, pt. 4 | Descriptions, measurements, ratings, and monthly discharge (also some long-time records). | 1897. |
| WS 27 | Measurements, ratings, and gage heights, for eastern United States, eastern Mississippi River, and Missouri River. | 1898. |
| WS 28 | Measurements, ratings, and gage heights, for Arkansas River and western United States. | 1898. |
| 20th A, pt. 4 | Monthly discharge (also for many earlier years) | 1898. |
| WS 35 to 39 | Descriptions, measurements, gage heights, and ratings | 1899. |
| 21st A, pt. 4 | Monthly discharge | 1899. |
| WS 47 to 52 | Descriptions, measurements, gage heights, and ratings | 1900. |
| 22d A, pt. 4 | Monthly discharge | 1900. |
| WS 65, 66 | Descriptions, measurements, gage heights, and ratings | 1901. |
| WS 75 | Monthly discharge | 1901. |
| WS 82 to 85 | Complete data | 1902. |
| WS 97 to 100 | do | 1903. |
| WS 124 to 135 | do | 1904. |
| WS 165 to 178 | do | 1905. |
| WS 201 to 214 | do | 1906. |
| WS 241 to 252 | do | 1907–8. |
| WS 261 to 272 | do | 1909. |
| WS 281 ts 292 | do | 1910. |
| WS 301 to 312 | do | 1911. |
| WS 321 to 332 | do | 1912. |
| WS 351 to 362 | do | 1913. |

NOTE.—No data regarding stream flow are given in the 15th and 17th annual reports.

The table on page 12 gives, by years and drainage basins, the numbers of the papers on surface water supply published from 1899 to 1913. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for any station in the area covered ay Part I are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, and 351, which contain records for the New England streams from 1903 to 1913. The year covered by the report is indicated at the head of the column in which the paper is listed.

*Numbers of water-supply papers containing results of stream measurements, 1899–1913.*

| | 1899 [a] | 1900 [b] | 1901 | 1902 | 1903 | 1904 | 1905 | 1906 | 1907–8 | 1909 | 1910 | 1911 | 1912 | 1913 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North Atlantic | 35 | 47, [c] 48 | 65, 75 | 82 | 97 | [d] 124, [e] 125 [f] 126 | [d] 165, [e] 166 [f] 167 | [d] 201, [e] 202 [f] 203 | 241 | 261 | 281 | 301 | 321 | 351 |
| South Atlantic and eastern Gulf of Mexico | [g] 35, 36 | 48 | 65, 75 | [g] 82, 83 | [g] 97, 98 | [f] 126, 127 | [f] 167, 168 | [f] 203, 204 | 242 | 262 | 282 | 302 | 322 | 352 |
| Ohio River basin | 36 | 48, [h] 49 | 65, 75 | 83 | 98 | 128 | 169 | 205 | 243 | 263 | 283 | 303 | 323 | 353 |
| St. Lawrence River and Great Lakes | 36 | 49 | 65, 75 | [i] 82, 83 | 97 | 129 | 170 | 206 | 244 | 264 | 284 | 304 | 324 | 354 |
| Hudson Bay and Upper Mississippi River | 36 | 49 | [j] 65, 66, 75 | [i] 83, 85 | [j] 98, 99, [k] 100 | [j] 128, 130 | 171 | 207 | 245 | 265 | 285 | 305 | 325 | 355 |
| Missouri River | [l] 36, 37 | 49, [m] 50 | 66, 75 | 84 | 99 | 130, [n] 131 | 172 | 208 | 246 | 266 | 286 | 306 | 326 | 356 |
| Lower Mississippi River | 37 | 50 | [j] 65, 66, 75 | [j] 83, 84 | [j] 98, 99 | [j] 128, 131 | [j] 169, 173 | [j] 205, 209 | 247 | 267 | 287 | 307 | 327 | 357 |
| Western Gulf of Mexico | 37 | 50 | 66, 75 | 84 | 99 | 132 | 174 | 210 | 248 | 268 | 288 | 308 | 328 | 358 |
| Colorado River | [o] 37, 38 | 50 | 66, 75 | 85 | 100 | 133 | 175, [p] 177 | 211 | 249 | 269 | 289 | 309 | 329 | 359 |
| Great Basin | 38, [q] 39 | 51 | 66, 75 | 85 | 100 | 133, [r] 134 | 176, [r] 177 | 212, [r] 213 | 250, [r] 251 | 270, [r] 271 | 290, [r] 291 | 310 | 330 | 360 |
| California | 38, [s] 39 | 51 | 66, 75 | 85 | 100 | 134 | 177 | 213 | 251 | 271 | 291 | 311 | 331 | 361 |
| North Pacific | 38 | 51 | 66, 75 | 85 | 100 | 135 | [t] 177, 178 | 214 | 252 | 272 | 292 | 312 | [u] 332 | [u] 362 |

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39.
[b] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52.
[c] Wissahickon and Schuylkill rivers to James River.
[d] New England rivers only.
[e] Hudson River to Delaware River, inclusive.
[f] Susquehanna River to Yadkin River, inclusive.
[g] James River only.
[h] Scioto River.
[i] Lake Ontario and tributaries to St. Lawrence River proper.
[j] Tributaries of Mississippi from east.
[k] Hudson Bay only.
[l] Gallatin River.
[m] Loup and Platte rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[n] Platte and Kansas rivers.
[o] Green and Gunnison rivers and Grand River above junction with Gunnison.
[p] Below junction with Gila.
[q] Mohave River only.
[r] Great Basin in California, excepting Truckee and Carson drainage basins.
[s] Kings and Kern rivers only.
[t] Rogue, Umpqua, and Siletz rivers only.
[u] In three parts: *A*, Pacific basins in Washington and upper Columbia River; *B*, Snake River basin; *C*, Lower Columbia River and Pacific basins in Oregon.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be obtained free of charge by applying to the Director of the Geological Survey, Washington, D. C. The edition printed for free distribution is, however, small and is soon exhausted.

2. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will on application furnish lists giving prices.

3. Sets of the reports may be consulted in the libraries of the principal cities of the United States.

4. Complete sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Boston, Mass., Customhouse.
Albany, N. Y., Room 18, Federal Building.
Atlanta, Ga., Post Office Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
St. Paul, Minn., Old Capitol Building.
Austin, Tex., Old Post Office Building.
Helena, Mont., Montana National Bank Building.
Denver, Colo., 403 New Post Office Building.
Phoenix, Ariz., 417 Fleming Building.
Salt Lake City, Utah, 421 Federal Building.
Boise, Idaho, 615 Idaho Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 416 Couch Building.
San Francisco, Cal., 328 Customhouse.
Los Angeles, Cal., 619 Federal Building.
Honolulu, Hawaii, Kapiolani Building.

A list of the Geological Survey's publications will be sent on application to the Director of the United States Geological Survey, Washington, D. C.

## DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches, acre-feet, and millions of cubic feet. The units used in this series of reports are second-feet, second-feet per square mile, run-off in inches, acre-feet, and millions of cubic feet. They may be defined as follows:

"Second-foot" is an abbreviation for "cubic foot per second," and is a unit for the rate of discharge of water flowing in a stream.

A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section, 1 foot wide and 1 foot deep, at an average velocity of 1 foot a second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the tables of convenient equivalents (p. 15).

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depth in inches)" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot" is equivalent to 43,560 cubic feet and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

"Millions of cubic feet" is a unit used to express quantities of water stored in reservoirs, and is most frequently used in studies of flood control.

The following terms used in these reports are not in common use and may be defined as follows:

"Control," "controlling section," and "point of control" are terms used to designate that cross section of the stream below the gage which controls or regulates the height of the water surface at the gage. It should be noted that the control may not be the same cross section at all stages.

"Discharge relation" is an abbreviation for the term "relation of gage height to discharge."

The "point of zero flow" for a given gaging station is that point on the gage—the gage height—to which the surface of the river would fall if there were no flow.

## CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

*Table for converting velocity in feet per second into velocity in miles per hour.*

[1 foot per second=0.681818 mile per hour, or very nearly ⅔ mile per hour. 1 mile per hour=1.4667 feet per second, or very nearly 1½ feet per second. In computing the table the values 0.68182 and 1.4667 were used.]

| Units. | Tenths. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0 | 0.000 | 0.068 | 0.136 | 0.205 | 0.273 | 0.341 | 0.409 | 0.477 | 0.545 | 0.614 |
| 1 | .682 | .750 | .818 | .886 | .955 | 1.02 | 1.09 | 1.16 | 1.23 | 1.30 |
| 2 | 1.36 | 1.43 | 1.50 | 1.57 | 1.64 | 1.70 | 1.77 | 1.84 | 1.91 | 1.98 |
| 3 | 2.05 | 2.11 | 2.18 | 2.25 | 2.32 | 2.39 | 2.45 | 2.52 | 2.59 | 2.66 |
| 4 | 2.73 | 2.80 | 2.86 | 2.93 | 3.00 | 3.07 | 3.14 | 3.20 | 3.27 | 3.34 |
| 5 | 3.41 | 3.48 | 3.55 | 3.61 | 3.68 | 3.75 | 3.82 | 3.89 | 3.95 | 4.02 |
| 6 | 4.09 | 4.16 | 4.23 | 4.30 | 4.36 | 4.43 | 4.50 | 4.57 | 4.64 | 4.70 |
| 7 | 4.77 | 4.84 | 4.91 | 4.98 | 5.05 | 5.11 | 5.18 | 5.25 | 5.32 | 5.39 |
| 8 | 5.45 | 5.52 | 5.59 | 5.66 | 5.73 | 5.80 | 5.86 | 5.93 | 6.00 | 6.07 |
| 9 | 6.14 | 6.20 | 6.27 | 6.34 | 6.41 | 6.48 | 6.55 | 6.61 | 6.68 | 6.75 |

*Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.*

| Discharge in second-feet per square mile. | Run-off in inches. | | | | |
|---|---|---|---|---|---|
| | 1 day. | 28 days. | 29 days. | 30 days. | 31 days. |
| 1 | 0.03719 | 1.041 | 1.079 | 1.116 | 1.153 |
| 2 | .07438 | 2.083 | 2.157 | 2.231 | 2.306 |
| 3 | .11157 | 3.124 | 3.236 | 3.347 | 3.459 |
| 4 | .14876 | 4.165 | 4.314 | 4.463 | 4.612 |
| 5 | .18595 | 5.207 | 5.393 | 5.578 | 5.764 |
| 6 | .22314 | 6.248 | 6.471 | 6.694 | 6.917 |
| 7 | .26033 | 7.289 | 7.550 | 7.810 | 8.070 |
| 8 | .29752 | 8.331 | 8.628 | 8.926 | 9.223 |
| 9 | .33471 | 9.372 | 9.707 | 10.041 | 10.376 |

NOTE.—For part of a month multiply run-off for one day by the number of days.

*Table for converting discharge in second-feet into run-off in acre-feet.*

| Discharge in second-feet. | Run-off in acre-feet. | | | | |
|---|---|---|---|---|---|
| | 1 day. | 28 days. | 29 days. | 30 days. | 31 days. |
| 1 | 1.983 | 55.54 | 57.52 | 59.50 | 61.49 |
| 2 | 3.967 | 111.1 | 115.0 | 119.0 | 123.0 |
| 3 | 5.950 | 166.6 | 172.6 | 178.5 | 184.5 |
| 4 | 7.934 | 222.1 | 230.1 | 238.0 | 246.0 |
| 5 | 9.917 | 277.7 | 287.6 | 297.5 | 307.4 |
| 6 | 11.90 | 333.2 | 345.1 | 357.0 | 368.9 |
| 7 | 13.88 | 388.8 | 402.6 | 416.5 | 430.4 |
| 8 | 15.87 | 444.3 | 460.2 | 476.0 | 491.9 |
| 9 | 17.85 | 499.8 | 517.7 | 535.5 | 553.4 |

NOTE.—For part of a month multiply run-off for one day by the number of days.

*Table for converting discharge in second-feet into run-off in millions of gallons.*

| Discharge in second-feet. | Run-off in millions of gallons. | | | | |
|---|---|---|---|---|---|
| | 1 day. | 28 days. | 29 days. | 30 days. | 31 days. |
| 1 | 0.6463 | 18.10 | 18.74 | 19.39 | 20.04 |
| 2 | 1.293 | 36.20 | 37.48 | 38.78 | 40.08 |
| 3 | 1.939 | 54.30 | 56.22 | 58.17 | 60.12 |
| 4 | 2.585 | 72.40 | 74.96 | 77.56 | 80.16 |
| 5 | 3.232 | 90.50 | 93.70 | 96.95 | 100.2 |
| 6 | 3.878 | 108.6 | 112.4 | 116.3 | 120.2 |
| 7 | 4.524 | 126.7 | 131.2 | 135.7 | 140.3 |
| 8 | 5.171 | 144.8 | 149.9 | 155.1 | 160.3 |
| 9 | 5.817 | 162.9 | 168.7 | 174.5 | 180.4 |

NOTE.—For part of a month multiply run-off for one day by the number of days.

*Table for converting discharge in second-feet into run-off in millions of cubic feet.*

| Discharge in second-feet. | Run-off in millions of cubic feet. | | | | |
|---|---|---|---|---|---|
| | 1 day. | 28 days. | 29 days. | 30 days. | 31 days. |
| 1 | 0.0864 | 2.419 | 2.506 | 2.592 | 2.678 |
| 2 | .1728 | 4.838 | 5.012 | 5.184 | 5.356 |
| 3 | .2592 | 7.257 | 7.518 | 7.776 | 8.034 |
| 4 | .3456 | 9.676 | 10.024 | 10.368 | 10.712 |
| 5 | .4320 | 12.095 | 12.530 | 12.960 | 13.390 |
| 6 | .5184 | 14.514 | 15.036 | 15.552 | 16.068 |
| 7 | .6048 | 16.933 | 17.542 | 18.144 | 18.746 |
| 8 | .6912 | 19.352 | 20.048 | 20.736 | 21.424 |
| 9 | .7776 | 21.771 | 22.554 | 23.328 | 24.102 |

NOTE.—For part of a month multiply run-off for one day by the number of days.

1 second-foot equals 40 California miner's inches (law of March 23, 1901).

1 second-foot equals 38.4 Colorado miner's inches.

1 second-foot equals 40 Arizona miner's inches.

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.

1 second-foot for one year (365 days) covers 1 square mile 1.131 feet or 13.572 inches deep.

1 second-foot for one year (365 days) equals 31,536,000 cubic feet.

1 second-foot equals about 1 acre-inch per hour.

1 second-foot for one day equals 86,400 cubic feet.

1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.

1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.

1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.

1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.

1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.

100 California miner's inches equals 18.7 United States gallons per second.

100 California miner's inches for one day equals 4.96 acre-feet.

100 Colorado miner's inches equals 2.60 second-feet.

100 Colorado miner's inches equals 19.5 United States gallons per second.

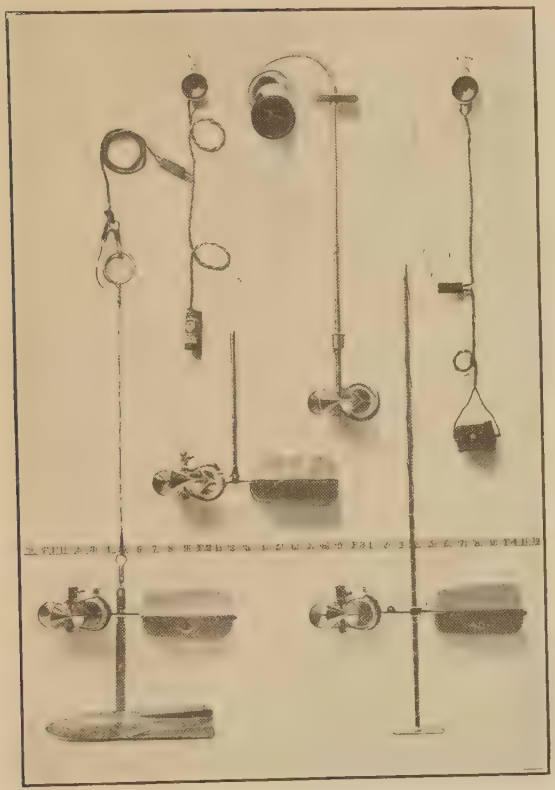
100 Colorado miner's inches for one day equals 5.17 acre-feet.

100 United States gallons per minute equals 0.223 second-foot.

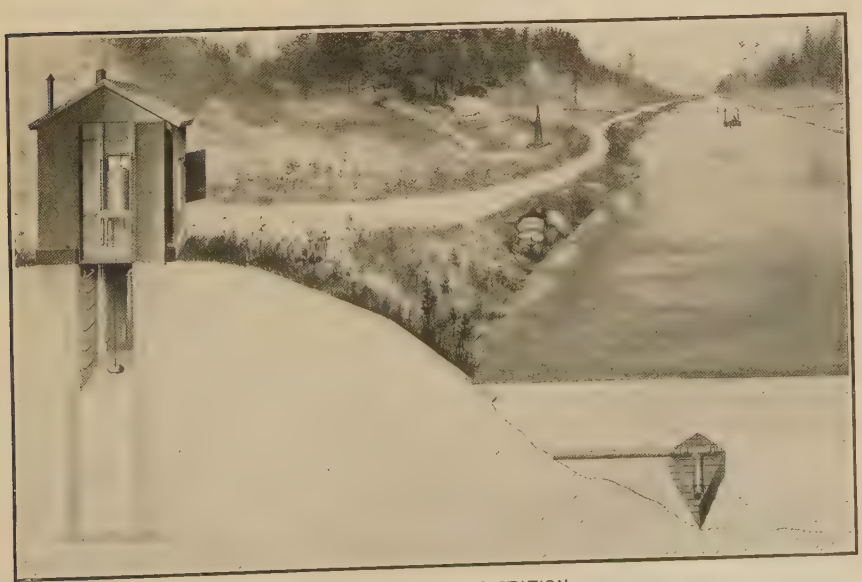
100 United States gallons per minute for one day equals 0.442 acre-foot.

1,000,000 United States gallons per day equals 1.55 second-feet.

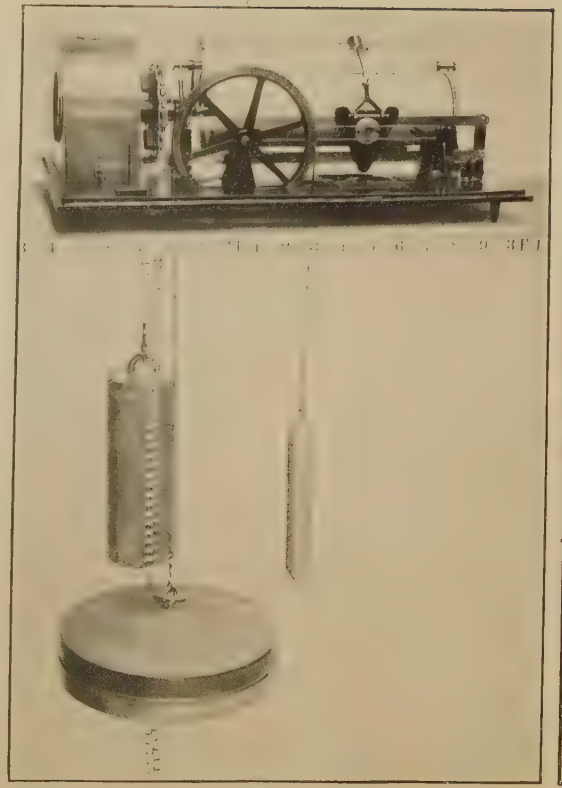
1,000,000 United States gallons equals 3.07 acre-feet.



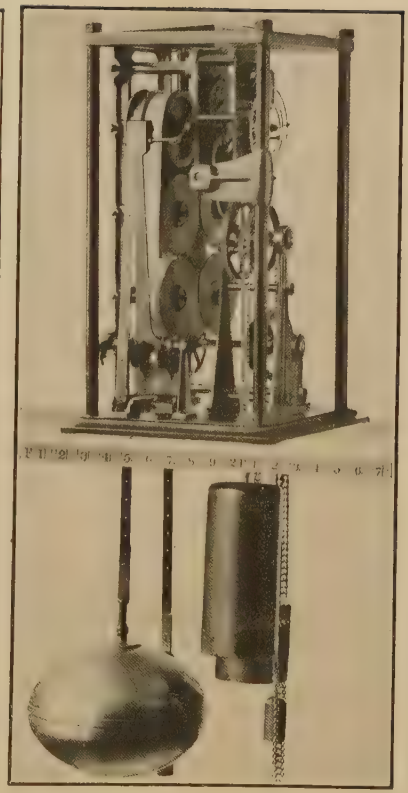
*A.* PRICE CURRENT METERS.



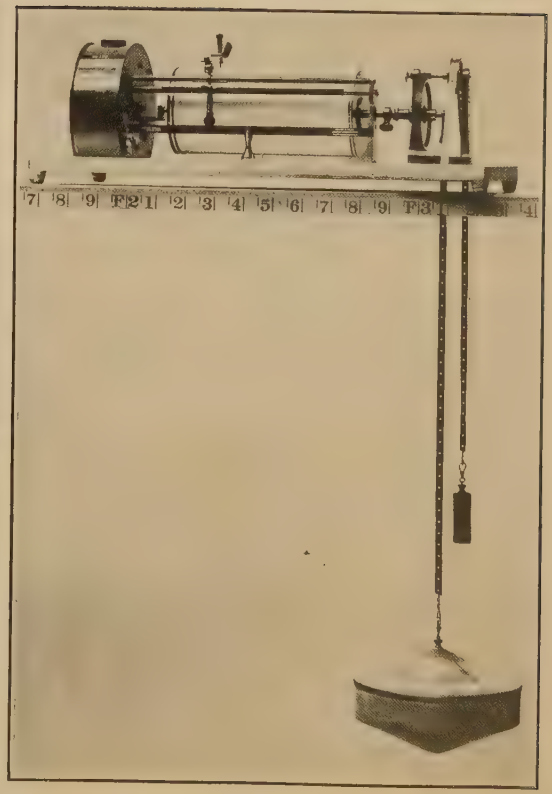
*B.* TYPICAL GAGING STATION.



*A.* STEVENS.



*B.* GURLEY PRINTING.



*C.* FRIEZ.

WATER-STAGE RECORDERS.

1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1⅓ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Second-feet} \times \text{fall in feet}}{11} = \text{net horsepower on water wheel realizing 80 per cent of theoretical power.}$

## EXPLANATION OF DATA.

For each regular current-meter gaging station the following data are given: Description of the station, list of discharge measurements, table of daily gage height, table of daily discharge, table of monthly and yearly discharge and run-off. For stations located at weirs or dams the gage-height table is usually omitted.

In addition to statements regarding the location and equipment of current-meter stations, the descriptions give information in regard to any conditions which may affect the constancy of the discharge relation covering such points as ice, logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the measuring section. Statements are also made regarding the accuracy of the data and computed results.

The table of daily gage height shows the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day, usually in the morning and in the evening, though at many stations only one reading is made each day. At a comparatively few stations automatic gages are used, some of which give a continuous record of river stage in the form of a hydrograph, and others a record printed at regular intervals, from which the mean daily gage height can be computed. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. When the discharge relation is affected by the presence of ice in the streams or by backwater from

obstructions, gage heights are published as recorded, with suitable footnotes. The rating table is not applicable for such periods unless the proper corrections to the gage heights are known and applied. Attention is called to the fact that the zero of the gage is placed at an arbitrary datum and has no relation to zero flow or the bottom of the river. In general the zero is located somewhat below the lowest known stage to avoid negative readings.

In the tables of daily gage height the use of zeros in the hundredths place indicates the degree of refinement to which the gage was read and to which the mean daily gage height was computed. If a gage is read to tenths or half-tenths once a day or to tenths twice a day no zeros appear in the hundredths place for any stage. If the gage is read to half-tenths twice a day or to quarter-tenths or hundredths, regardless of the number of readings a day, the gage heights are published to hundredths, and zeros appear in the hundredths place, below a certain limiting stage. This limiting stage is so selected that the average error in the mean daily discharge, resulting from not using the mean daily gage height to hundredths above that stage, shall not be greater than 2 per cent. For automatic gages the allowable average error of the daily discharge has been taken as 1 per cent. The selection of the percentage is arbitrary, but it should be noted that the maximum error will in all cases be twice the average error. In like manner half-tenths are used from the hundredths limit to another higher limit, above which only tenths are used. It is the aim to have the gage-height observations at each gaging station recorded to the degree of refinement required by the above-described method of use, but in practice it is often found necessary, in order to avoid confusion in the gage observer's record, to have the observations for all stages recorded to the degree of refinement required for low stages, which usually necessitates readings to hundredths of a foot.

The discharge measurements and gage heights are the base data from which rating tables, daily discharge tables, and monthly discharge tables are computed.

The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. It is not published in this report, but can be determined from the tables of daily gage height and daily discharge by plotting gage heights in feet as ordinates and discharge in second-feet as abscissas.

The table of daily discharge determined from the rating table gives the discharge in second-feet corresponding to the mean of the gage readings observed each day.

The base data presented in this report, unless otherwise stated in the description of the station, have been collected by the methods

commonly used at current-meter gaging stations and described in standard textbooks.

In the table of monthly discharge the column headed "Maximum" gives the mean flow, as determined from the rating table, for the day when the mean gage height was highest. As the gage height is the mean for the day, it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column of "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this the computations for the remaining columns, which are defined on pages 14 and 15, are based.

## ACCURACY OF FIELD DATA AND COMPUTED RESULTS.

The accuracy of stream-flow data depends on (1) the permanence of channel and of the relation between discharge and stage, and (2) on the accuracy of observation of stage, measurements of discharge, and interpretation of data.

In order to give engineers and others information regarding the probable accuracy of the computed results, footnotes are added to the daily discharge tables, stating the probable accuracy of the rating curves used, and an accuracy column is inserted in the monthly discharge table. For the rating curves "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined" or "approximate," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The accuracy column in the monthly discharge table does not apply to the estimate of maximum or minimum discharge nor to that for any one day, but to the monthly mean. It is based on the accuracy of the rating, the probable reliability of the observer, the number of gage readings per day, the range of the fluctuation in stage, and knowledge of local conditions. In this column A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

Even though the monthly means for any station may represent with a high degree of accuracy the quantity of water flowing past the gage, the figures showing discharge per square mile and depth of run-off in inches may be subject to gross errors which result from including in the measured drainage area large noncontributing districts or omitting estimates of water diverted for irrigation or other use. "Second-feet per square mile" and "run-off, depth in inches" have, therefore, not been computed for streams draining areas in which

the annual rainfall is less than 20 inches, nor for streams draining areas in which the precipitation exceeds 20 inches if such computations might be uncertain or misleading because of the presence of large noncontributing districts in the measured drainage area, of the omission of estimates of water diverted for irrigation or other use, or of artificial control or unusual natural control of the flow of the river above the gaging station. All values of "second-feet per square mile" and "run-off, depth in inches" previously published by the Survey should be used with extreme caution, and such values in this report should be used with care because of possible inherent sources of error not known to the Survey.

In general the base data collected each year by the Survey engineers are published, not only to comply with the law, but also to afford any engineer the means of analyzing in detail the results of the computations. The table of monthly discharge is so arranged as to give only a general idea of the flow at the station and should not be used for other than preliminary estimates. The tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data already collected and published.

## COOPERATION.

The hydrographic work of the United States Geological Survey in California is being carried on in cooperation with the State in accordance with acts of the State legislatiure, approved March 16, 1903, March 20, 1905, March 11, 1907, and April 22, 1909, empowering the State authorities to enter into contracts with the Director of the United States Geological Survey for the purpose of making topographic maps, gaging streams, surveying reservoir sites and canal locations, for the conservation and utilization of the flood and storm waters of the State.

The cooperative agreements with the Conservation Commission and the State Board of Control (Water Power) of the State of California, signed in September, 1911, continue in force. The funds contributed by these commissions during the year were expended mainly in maintenance of stations previously established and in the installation of water-stage recorders.

The members of the Conservation Commission are George C. Pardee (chairman), Francis Cuttle, and J. P. Baumgartner. The members of the State Water Commission are Hiram W. Johnson (governor), Charles D. Marx (chairman), S. C. Graham, Harold T. Power, and W. F. McClure (State engineer).

The work in the Klamath River basin in Oregon was carried on in cooperation with the United States Reclamation Service, which furnished the field data.

## DIVISION OF WORK.

The data pertaining to California were collected and prepared for publication under the direction of H. D. McGlashan, district engineer, by E. C. Murphy, F. C. Ebert, R. C. Rice, G. H. Canfield, Lasley Lee, Charles Leidl, H. J. Tompkins, J. H. Morgan, and M. B. Trelease.

Data pertaining to Oregon were prepared for publication under the direction of F. F. Henshaw, district engineer, by E. S. Fuller, C. L. Batchelder, and P. V. Hodges.

The manuscript was assembled by H. J. Dean.

## GAGING STATION RECORDS.

### TIA JUANA RIVER BASIN.

#### COTTONWOOD CREEK NEAR DULZURA,[1] CAL.

LOCATION.—In the SW. ¼ sec. 15, T. 17 S., R. 3 E., at Barrett dam site, 1½ miles below intake of Dulzura conduit, about 17 miles northeast of Dulzura. Pine Valley Creek enters 1 mile and Lyons Creek half a mile above the station.

RECORDS AVAILABLE.—December 15, 1905, to September 30, 1913.

DRAINAGE AREA.—246 square miles, revised estimate; area measured on military survey and United States Geological Survey topographic maps.

GAGE.—Two vertical staffs. Upper gage is on left bank near end of dam and indicates depth of water on the crest; lower gage, which is on upstream side of dam between flume and right bank, is read when no water is flowing over crest of dam; its datum is 2.50 feet lower than that of the upper gage. The upper gage was not used during 1912 and 1913.

CHANNEL.—Shifting sand above dam.

DISCHARGE MEASUREMENTS.—Made at low concrete dam back of which sand and gravel have been deposited to the level of its crest. At low stages the flow is restricted to a rectangular wooden flume through the wall of the dam, but at high stages water passes over the entire length of the dam, which is 61 feet. Measurements are made by wading, except at high stages, when only float measurements have been obtained.

DIVERSIONS.—Dulzura conduit diverts water from Cottonwood and Pine Valley creeks, about half a mile above their junction, into the Dulzura Creek drainage basin. From the end of the conduit the water flows down the natural channel of Dulzura Creek into the Lower Otay reservoir. The water is used for municipal supply at San Diego. The conduit is 13.38 miles long and is concrete lined except 4,490 feet of flume and 9,219 feet of tunnel. The average width is about 5 feet and the depth 4 feet 2 inches. The grade is 4 feet in 5,000 and the capacity 40,000,000 gallons in 24 hours. Loss by seepage between intake and measuring weir is estimated at about 3 per cent.

In the fall of 1912 the city of San Diego voted to purchase this water system, exclusive of the Morena reservoir, from the Southern California Mountain Water Co. The system was turned over to the city February 1, 1913. Morena reservoir was leased for 10 years.

STORAGE.—The Morena reservoir, about 9 miles above the Barrett dam site, has a capacity of 46,000 acre-feet. On October 1, 1913, there were 1,162 acre-feet impounded in the reservoir.

[1] Formerly described as "near Jamul."

ACCURACY.—Daily discharge originally computed in gallons per day by city of San Diego from rating curve prepared by Geological Survey. Results considered good.

COOPERATION.—Estimates of daily discharge in gallons furnished by the department of water, city of San Diego, through H. A. Whitney, hydraulic engineer.

The following discharge measurement was made by H. D. McGlashan:
April 16, 1913: Gage height, 0.23 foot; discharge, 2.3 second-feet.

*Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 1.0 | 1.3 | 1.0 | 2.9 | 8.5 | 2.0 | 0.6 |
| 2 | .0 | 1.0 | 1.3 | 1.0 | 2.0 | 6.6 | 2.0 | .6 |
| 3 | .0 | .9 | 1.3 | 1.0 | 1.7 | 4.3 | 2.0 | .6 |
| 4 | .0 | .7 | 1.3 | 1.0 | 1.5 | 2.5 | 1.8 | .6 |
| 5 | .0 | .9 | 1.3 | 1.4 | 1.5 | 2.4 | 1.8 | .6 |
| 6 | .0 | .9 | 1.3 | 1.4 | 1.5 | 2.2 | 1.8 | .6 |
| 7 | .0 | 1.0 | 1.3 | 1.4 | 1.5 | 2.4 | 1.5 | .6 |
| 8 | .0 | .9 | 1.3 | 1.5 | 1.4 | 2.2 | 1.4 | .5 |
| 9 | .0 | 1.0 | 1.7 | 1.4 | 1.4 | 2.2 | 1.2 | .5 |
| 10 | .2 | 1.2 | 1.7 | 1.2 | 1.4 | 2.2 | 1.2 | .5 |
| 11 | .3 | 1.2 | 1.7 | 1.2 | 1.5 | 2.4 | 1.2 | .5 |
| 12 | .3 | 1.3 | 1.5 | 1.2 | 1.8 | 2.4 | 1.2 | .5 |
| 13 | .3 | 1.3 | 1.5 | 1.2 | 1.5 | 2.5 | 1.2 | .4 |
| 14 | .4 | 1.2 | 1.3 | 1.2 | 1.4 | 2.7 | 1.2 | .4 |
| 15 | .5 | 1.2 | 1.8 | 1.2 | 1.4 | 2.7 | 1.0 | .4 |
| 16 | .9 | 1.2 | 2.4 | 1.2 | 1.4 | 2.7 | 1.0 | .3 |
| 17 | .9 | 1.3 | 2.4 | 1.2 | 1.2 | 2.5 | 1.0 | .3 |
| 18 | .9 | 1.3 | 1.7 | 1.2 | 1.4 | 2.5 | 1.0 | .3 |
| 19 | .9 | 1.3 | 1.5 | 1.4 | 1.4 | 2.4 | .9 | .3 |
| 20 | 1.0 | 1.3 | 1.5 | 1.8 | 1.5 | 2.4 | .7 | .2 |
| 21 | .9 | 1.3 | 1.5 | 2.2 | 1.5 | 2.0 | .6 | .2 |
| 22 | .9 | 1.3 | 1.7 | 29 | 1.5 | 2.0 | .6 | .2 |
| 23 | .9 | 1.3 | 1.5 | 3.4 | 1.5 | 2.0 | .6 | .2 |
| 24 | .7 | 1.3 | 1.5 | 2.0 | 3.2 | 1.8 | .4 | .2 |
| 25 | .7 | 1.3 | 1.5 | 10 | 1.7 | 1.8 | .4 | .2 |
| 26 | 1.0 | 1.3 | 1.5 | 2.5 | 1.5 | 1.8 | .4 | .0 |
| 27 | 1.2 | 1.3 | 1.5 | 6.6 | 1.4 | 1.8 | .4 | .0 |
| 28 | 1.3 | 1.3 | 1.2 | 2.5 | 1.4 | 2.0 | .6 | .0 |
| 29 | 1.0 | 1.3 | 1.2 | ..... | 1.4 | 2.0 | .4 | .0 |
| 30 | 1.2 | 1.3 | 1.0 | ..... | 1.8 | 2.0 | .4 | .0 |
| 31 | ..... | 1.3 | 1.0 | ..... | 6.3 | ..... | .4 | ..... |

NOTE.—Estimates of daily discharge, furnished by department of water, city of San Diego, in gallons per day, recomputed in second-feet by engineers of Geological Survey. No flow Oct. 1 to Nov. 9, 1912, June 26 to Sept. 12, 1913, and Sept. 15 to 30, 1913. Mean discharge Sept. 13 and 14 estimated at 25.6 second-feet.

*Monthly discharge of Cottonwood Creek near Dulzura, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 0.0 | 0.0 | 0.00 | 0 |
| November | 1.3 | .0 | a.91 | 54 |
| December | 1.3 | .7 | a1.52 | 93 |
| January | 2.4 | 1.0 | 1.49 | 92 |
| February | 29 | 1.0 | 2.98 | 166 |
| March | 6.3 | 1.2 | 1.76 | 108 |
| April | 8.5 | 1.8 | 2.66 | 158 |
| May | 2.0 | .4 | 1.04 | 64 |
| June | .6 | .0 | .34 | 20 |
| July | .0 | .0 | .00 | 0 |
| August | .0 | .0 | .00 | 0 |
| September | ..... | .0 | 1.70 | 101 |
| The year | 29 | .0 | 1.18 | 856 |

a Mean discharge for November and December increased 0.36 second-foot, as department of water states that this quantity was diverted from Cottonwood Creek into Dulzura conduit for maintenance, but did not reach the gaging station on Dulzura conduit.

*Total daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Dulzura, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 1.0 | 1.3 | 2.2 | 24.4 | 56.8 | 33.8 | 0.6 |
| 2 | .0 | 1.0 | 1.3 | 2.2 | 17.8 | 52.3 | 34.8 | .6 |
| 3 | .0 | .9 | 1.3 | 2.2 | 15.5 | 51.9 | 16.4 | .6 |
| 4 | .0 | .7 | 1.3 | 2.2 | 16.7 | 48.2 | 27.6 | .6 |
| 5 | .0 | .9 | 1.3 | 2.6 | 15.3 | 49.0 | 32.6 | .6 |
| 6 | .0 | .9 | 1.3 | 3.8 | 15.9 | 48.8 | 32.6 | .6 |
| 7 | .0 | 1.0 | 1.3 | 4.3 | 18.0 | 50.0 | 11.4 | .6 |
| 8 | .0 | .9 | 1.3 | 5.1 | 14.6 | 49.8 | 9.2 | .5 |
| 9 | .0 | 1.0 | 1.7 | 4.3 | 15.2 | 49.8 | 7.7 | .5 |
| 10 | .2 | 1.2 | 10.2 | 3.0 | 15.2 | 49.8 | 6.5 | .5 |
| 11 | .3 | 1.2 | 7.6 | 3.0 | 15.9 | 49.0 | 5.4 | .5 |
| 12 | .3 | 1.3 | 6.3 | 3.0 | 21.0 | 47.1 | 4.8 | .5 |
| 13 | .3 | 1.3 | 5.4 | 2.4 | 18.0 | 50.1 | 4.1 | .4 |
| 14 | .4 | 1.2 | 4.2 | 1.7 | 20.6 | 50.3 | 4.1 | .4 |
| 15 | .5 | 1.2 | 4.7 | 1.2 | 18.6 | 39.5 | 4.6 | .4 |
| 16 | .9 | 1.2 | 15.6 | 1.2 | 15.2 | 42.8 | 3.4 | .3 |
| 17 | .9 | 1.3 | 12.7 | 1.2 | 13.1 | 46.3 | 2.8 | .3 |
| 18 | .9 | 1.3 | 8.9 | 1.2 | 16.6 | 39.3 | 1.9 | .3 |
| 19 | .9 | 1.3 | 7.1 | 1.4 | 15.2 | 39.2 | 1.8 | .3 |
| 20 | 1.0 | 1.3 | 5.7 | 4.2 | 14.7 | 37.4 | 2.1 | .2 |
| 21 | .9 | 1.3 | 5.7 | 5.1 | 18.0 | 37.0 | 2.4 | .2 |
| 22 | .9 | 1.3 | 5.3 | 61.8 | 15.9 | 37.0 | .6 | .2 |
| 23 | .9 | 1.3 | 4.4 | 22.6 | 18.0 | 37.0 | .6 | .2 |
| 24 | .7 | 1.3 | 3.9 | 14.5 | 20.4 | 36.8 | .4 | .2 |
| 25 | .7 | 1.3 | 3.3 | 25.1 | 20.9 | 35.9 | .4 | .2 |
| 26 | 1.0 | 1.3 | 3.3 | 32.2 | 18.7 | 36.8 | .4 | .0 |
| 27 | 1.2 | 1.3 | 3.3 | 29.8 | 17.2 | 36.8 | .4 | .0 |
| 28 | 1.3 | 1.3 | 3.0 | 36.4 | 15.8 | 34.8 | 1.5 | .0 |
| 29 | 1.0 | 1.3 | 3.0 | ..... | 22.1 | 34.8 | 3.2 | .0 |
| 30 | 1.2 | 1.3 | 2.5 | ..... | 34.6 | 34.8 | 1.8 | .0 |
| 31 | ..... | 1.3 | 2.2 | ..... | 52.9 | ..... | .4 | ..... |

*Total monthly discharge of Cottonwood Creek and Dulzura conduit near Dulzura, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 0.0 | 0.0 | 0.00 | 0 |
| November | 1.3 | .0 | .91 | 54 |
| December | 1.3 | .7 | 1.52 | 93 |
| January | 15.6 | 1.3 | 4.53 | 279 |
| February | 61.8 | 1.2 | 10.0 | 555 |
| March | 52.9 | 13.1 | 19.1 | 1,170 |
| April | 56.8 | 34.8 | 43.6 | 2,590 |
| May | 34.8 | .4 | 8.38 | 515 |
| June | .6 | .0 | .34 | 20 |
| July | .0 | .0 | .00 | 0 |
| August | .0 | .0 | .00 | 0 |
| September | ..... | .0 | 2.83 | 168 |
| The year | 61.8 | .0 | 7.54 | 5,440 |

## DULZURA CONDUIT[1] NEAR DULZURA, CAL.

LOCATION.—About 12 miles below intake and 2 miles southeast of Dulzura; during 1909 and 1910 station was 1½ miles below intake.

RECORDS AVAILABLE.—January 1, 1909, to September 30, 1913.

GAGE.—Lietz water-stage recorder at weir.

DISCHARGE.—Computed from gage-height record at an 8-foot steel plate weir about 1¼ miles above lower end of conduit.

ACCURACY.—Water-stage recorder checked twice each day by patrolman. Results considered excellent.

COOPERATION.—Estimates of daily discharge furnished in gallons per day by department of water, city of San Diego, through H. A. Whitney, hydraulic engineer.

*Daily discharge, in second-feet, of Dulzura conduit near Dulzura Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | Sept. | Day. | Jan. | Feb. | Mar. | Apr. | May. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 1.2 | 21.5 | 48.3 | 31.8 | ..... | 16 | 13.2 | .0 | 13.8 | 40.1 | 2.4 | ..... |
| 2 | .0 | 1.2 | 15.8 | 45.7 | 32.8 | ..... | 17 | 10.3 | .0 | 11.9 | 43.8 | 1.8 | ..... |
| 3 | .0 | 1.2 | 13.8 | 47.6 | 14.4 | ..... | 18 | 7.2 | .0 | 15.2 | 36.8 | .9 | ..... |
| 4 | .0 | 1.2 | 15.2 | 45.7 | 25.8 | ..... | 19 | 5.6 | .0 | 13.8 | 36.8 | .9 | ..... |
| 5 | .0 | 1.2 | 13.8 | 46.6 | 30.8 | ..... | 20 | 4.2 | 2.4 | 13.2 | 35.0 | 1.4 | ..... |
| 6 | .0 | 2.4 | 14.4 | 46.6 | 30.8 | ..... | 21 | 4.2 | 2.9 | 16.5 | 35.0 | 1.8 | ..... |
| 7 | .0 | 2.9 | 16.5 | 47.6 | 9.9 | ..... | 22 | 3.6 | 32.8 | 14.4 | 35.0 | .0 | ..... |
| 8 | .0 | 3.6 | 13.2 | 47.6 | 7.8 | ..... | 23 | 2.9 | 19.2 | 16.5 | 35.0 | .0 | ..... |
| 9 | .0 | 2.9 | 13.8 | 47.6 | 6.6 | ..... | 24 | 2.4 | 12.5 | 17.2 | 35.0 | .0 | ..... |
| 10 | 8.5 | 1.8 | 13.8 | 47.6 | 5.3 | ..... | 25 | 1.8 | 15.1 | 19.2 | 34.1 | .0 | ..... |
| 11 | 5.9 | 1.8 | 14.4 | 46.6 | 4.2 | ..... | 26 | 1.8 | 29.7 | 17.2 | 35.0 | .0 | ..... |
| 12 | 4.8 | 1.8 | 19.2 | 44.7 | 3.6 | ..... | 27 | 1.8 | 23.2 | 15.8 | 35.0 | .0 | ..... |
| 13 | 3.9 | 1.2 | 16.5 | 47.6 | 2.9 | 28.6 | 28 | 1.8 | 33.9 | 14.4 | 32.8 | .9 | ..... |
| 14 | 2.9 | .5 | 19.2 | 47.6 | 2.9 | 4.8 | 29 | 1.8 | ..... | 20.7 | 32.8 | 2.8 | ..... |
| 15 | 2.9 | .0 | 17.2 | 36.8 | 3.6 | .5 | 30 | 1.5 | ..... | 32.8 | 32.8 | 1.4 | ..... |
| | | | | | | | 31 | 1.2 | ..... | 46.6 | ..... | .0 | ..... |

NOTE.—No flow in conduit Oct. 1, 1912, to Jan. 9, 1913, Feb. 15 to 19, May 22 to 27, May 31 to Sept. 12, and Sept. 16 to 30, 1913.

[1] For description of conduit see Cottonwood Creek near Dulzura, Diversions, p. 21; station formerly described as "near Jamul."

*Monthly discharge of Dulzura conduit near Dulzura, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 0.0 | 0.0 | 0.00 | 0 |
| November | .0 | .0 | .00 | 0 |
| December | .0 | .0 | .00 | 0 |
| January | 13.2 | .0 | 3.04 | 187 |
| February | 33.9 | .0 | 7.02 | 390 |
| March | 46.6 | 11.9 | 17.3 | 1,060 |
| April | 48.3 | 32.8 | 41.0 | 2,440 |
| May | 32.8 | .0 | 7.34 | 451 |
| June | .0 | .0 | .00 | 0 |
| July | .0 | .0 | .00 | 0 |
| August | .0 | .0 | .00 | 0 |
| September | 28.6 | .0 | 1.13 | 67 |
| The year | 48.3 | .0 | 6.35 | 4,600 |

## SWEETWATER RIVER BASIN.

### SWEETWATER RIVER NEAR DESCANSO, CAL.

LOCATION.—In the SE. ¼ sec. 25, T.15 S., R.3 E., at the Ellis ranch, 2 miles below mouth of Guatay Creek, and about 1½ miles below Descanso.

RECORDS AVAILABLE.—November 21, 1905, to September 30, 1913.

DRAINAGE AREA.—43.7 square miles, revised estimate; area measured on military survey and United States Geological Survey topographic maps.

GAGE.—Staff in three sections on left bank.

CHANNEL.—Sand and gravel; shifting.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—A small irrigation ditch (capacity, about one-third second-foot) heads about 1,000 feet above station.

ACCURACY.—On account of the small number of discharge measurements made and the shifting of the channel the results are only fair.

*Discharge measurements of Sweetwater River near Descanso, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 4 | F. C. Ebert | 3.76 | 1.9 | Apr. 15 | H. D. McGlashan | 3.87 | 6.3 |
| Dec. 20 | do | 3.64 | .8 | May 14 | F. C. Ebert | 3.61 | 1.6 |
| Jan. 23 | do | 3.70 | 2.4 | June 20 | do | 3.46 | .4 |
| Mar. 16 | do | 4.15 | 12 | | | | |

*Daily gage height, in feet, of Sweetwater River near Descanso, Cal., for the year ending Sept. 30, 1913.*

[C. H. Ellis, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.6 | 3.65 | 3.7 | 3.65 | 3.7 | 4.0 | ..... | 3.7 | 3.55 | ..... | ..... | 3.6 |
| 2 | 3.6 | 3.65 | 3.7 | 3.65 | 3.7 | 4.0 | ..... | 3.7 | 3.55 | ..... | ..... | 3.6 |
| 3 | 3.6 | 3.65 | 3.7 | 3.65 | 3.7 | 4.0 | ..... | 3.7 | 3.55 | ..... | ..... | 3.6 |
| 4 | 3.7 | 3.65 | 3.7 | 3.65 | 3.7 | 4.0 | ..... | 3.65 | 3.55 | ..... | ..... | 3.6 |
| 5 | 3.85 | 3.65 | 3.7 | 3.65 | 3.75 | 4.0 | ..... | 3.65 | 3.55 | ..... | ..... | 3.6 |
| 6 | 3.75 | 3.65 | 3.7 | 3.65 | 3.8 | 4.0 | ..... | 3.65 | 3.55 | ..... | ..... | 3.6 |
| 7 | 3.7 | 3.65 | 3.7 | 3.65 | 3.75 | 4.05 | ..... | 3.65 | 3.55 | ..... | ..... | 3.6 |
| 8 | 3.7 | 3.65 | 3.7 | 3.65 | 3.7 | 4.1 | ..... | 3.6 | 3.55 | ..... | ..... | 3.6 |
| 9 | 3.65 | ..... | 3.7 | 3.7 | 3.7 | 4.1 | ..... | 3.6 | 3.55 | ..... | ..... | 3.6 |
| 10 | 3.65 | ..... | 3.7 | 3.75 | 3.7 | 4.15 | ..... | 3.6 | 3.55 | ..... | ..... | 3.6 |
| 11 | 3.65 | ..... | 3.7 | 3.85 | 3.7 | 4.2 | ..... | 3.6 | 3.55 | ..... | ..... | 3.6 |
| 12 | 3.65 | ..... | 3.7 | 3.85 | 3.7 | 4.2 | ..... | 3.6 | 3.55 | ..... | ..... | 4.3 |
| 13 | 3.65 | ..... | 3.7 | 3.9 | 3.7 | 4.25 | ..... | 3.6 | 3.5 | ..... | ..... | 4.55 |
| 14 | 3.65 | 3.65 | 3.7 | 3.95 | 3.7 | 4.3 | ..... | 3.6 | 3.5 | ..... | ..... | 3.85 |
| 15 | 3.65 | 3.65 | 3.7 | 4.2 | 3.7 | 4.2 | 3.85 | 3.55 | 3.5 | ..... | ..... | 3.7 |
| 16 | 3.65 | 3.65 | 3.7 | 4.0 | ..... | 4.15 | ..... | 3.55 | 3.5 | ..... | ..... | 3.7 |
| 17 | 3.65 | 3.65 | 3.7 | 3.95 | 3.7 | ..... | ..... | 3.55 | 3.5 | ..... | 3.6 | 3.7 |
| 18 | 3.65 | 3.65 | 3.7 | 3.9 | 3.7 | 4.15 | ..... | 3.55 | 3.5 | ..... | 3.6 | 3.7 |
| 19 | 3.65 | 3.65 | 3.65 | 3.9 | 3.7 | 4.15 | ..... | 3.55 | 3.5 | ..... | 3.6 | 3.7 |
| 20 | 3.65 | 3.65 | 3.65 | 3.85 | 3.7 | 4.15 | ..... | 3.55 | 3.5 | ..... | 3.6 | 3.7 |
| 21 | 3.65 | 3.65 | 3.65 | 3.8 | 4.05 | 4.15 | ..... | 3.55 | 3.5 | ..... | 3.6 | 3.7 |
| 22 | 3.65 | 3.65 | 3.65 | 3.75 | 4.45 | 4.15 | ..... | 3.55 | 3.45 | ..... | 3.6 | 3.7 |
| 23 | 3.65 | 3.65 | 3.65 | 3.7 | 4.25 | 4.15 | 3.7 | 3.55 | 3.45 | ..... | 3.65 | 3.7 |
| 24 | 3.65 | 3.65 | 3.65 | 3.7 | 4.3 | 4.25 | 3.7 | 3.55 | 3.45 | ..... | 3.65 | 3.7 |
| 25 | 3.65 | 3.65 | 3.65 | 3.7 | 4.35 | 4.2 | 3.7 | 3.55 | 3.45 | ..... | 3.7 | 3.7 |
| 26 | 3.65 | 3.65 | 3.65 | 3.7 | 4.2 | 4.15 | 3.7 | 3.55 | 3.45 | ..... | 3.65 | 3.7 |
| 27 | 3.65 | 3.65 | 3.65 | 3.7 | 4.2 | 4.1 | 3.7 | 3.55 | 3.45 | ..... | 3.65 | 3.7 |
| 28 | 3.65 | 3.65 | 3.65 | 3.7 | 4.15 | 4.05 | 3.7 | 3.6 | 3.45 | ..... | 3.6 | 3.7 |
| 29 | 3.65 | 3.7 | 3.65 | 3.7 | ..... | 4.0 | 3.7 | 3.6 | 3.45 | ..... | 3.6 | 3.7 |
| 30 | 3.65 | 3.75 | 3.65 | 3.7 | ..... | 4.0 | 3.7 | 3.6 | 3.45 | ..... | 3.6 | 3.7 |
| 31 | ..... | ..... | 3.65 | 3.7 | ..... | 4.0 | ..... | 3.55 | ..... | ..... | 3.6 | ..... |

NOTE.—Observer reported that during July and first part of August the water was all used on Ellisranch for irrigation and was only standing in pools along creek. Aug. 24 and Sept. 12, thunderstorms.

*Daily discharge, in second-feet, of Sweetwater River near Descanso, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 0.8 | 1 | 0.8 | 3 | 4.5 | 9.5 | 3 | 1 | ..... | 1.5 |
| 2 | .6 | .8 | 1 | .8 | 3 | 4.5 | 9.5 | 3 | 1 | ..... | 1.5 |
| 3 | .6 | .8 | 1 | .8 | 3 | 4.5 | 9 | 3 | 1 | ..... | 1.5 |
| 4 | 1 | .8 | 1 | .8 | 3 | 4.5 | 9 | 2 | 1 | ..... | 1.5 |
| 5 | 2 | .8 | 1 | .8 | 3.5 | 4.5 | 8.5 | 2 | 1 | ..... | 1.5 |
| 6 | 1.5 | .8 | 1 | .8 | 4.5 | 4.5 | 8 | 2 | 1 | ..... | 1.5 |
| 7 | 1 | .8 | 1 | .8 | 3.5 | 6.5 | 8 | 2 | 1 | ..... | 1.5 |
| 8 | 1 | .8 | 1 | .8 | 3 | 8.5 | 7.5 | 1.5 | 1 | ..... | 1.5 |
| 9 | .8 | .8 | 1 | 1 | 3 | 8.5 | 7.5 | 1.5 | 1 | ..... | 1.5 |
| 10 | .8 | .8 | 1 | 1.5 | 3 | 12 | 7 | 1.5 | 1 | ..... | 1.5 |
| 11 | .8 | .8 | 1 | 2 | 3 | 16 | 6.5 | 1.5 | 1 | ..... | 1.5 |
| 12 | .8 | .8 | 1 | 2 | 3 | 16 | 6.5 | 1.5 | 1 | ..... | 24 |
| 13 | .8 | .8 | 1 | 2.5 | 3 | 22 | 6 | 1.5 | .6 | ..... | 43 |
| 14 | .8 | .8 | 1 | 4 | 3 | 27 | 6 | 1.5 | .6 | ..... | 1.5 |
| 15 | .8 | .8 | 1 | 16 | 3 | 16 | 5.5 | 1 | .6 | ..... | .1 |
| 16 | .8 | .8 | 1 | 10 | 3 | 12 | 5 | 1 | .6 | ..... | .1 |
| 17 | .8 | .8 | 1 | 9 | 3 | 12 | 5 | 1 | .6 | 1.5 | .1 |
| 18 | .8 | .8 | 1 | 7 | 3 | 12 | 4.5 | 1 | .6 | 1.5 | .1 |
| 19 | .8 | .8 | .8 | 7 | 3 | 12 | 4 | 1 | .6 | 1.5 | .1 |
| 20 | .8 | .8 | .8 | 5.5 | 3 | 12 | 4 | 1 | .6 | 1.5 | .1 |
| 21 | .8 | .8 | .8 | 4.5 | 13 | 12 | 3.5 | 1 | .6 | 1.5 | .1 |
| 22 | .8 | .8 | .8 | 3.5 | 52 | 12 | 3.5 | 1 | .4 | 1.5 | .1 |
| 23 | .8 | .8 | .8 | 3 | 22 | 12 | 3 | 1 | .4 | 2 | .1 |
| 24 | .8 | .8 | .8 | 3 | 27 | 22 | 3 | 1 | .4 | 2 | .1 |
| 25 | .8 | .8 | .8 | 3 | 34 | 23 | 3 | 1 | .4 | 3 | .1 |
| 26 | .8 | .8 | .8 | 3 | 16 | 20 | 3 | 1 | .4 | 2 | .1 |
| 27 | .8 | .8 | .8 | 3 | 16 | 16 | 3 | 1 | .4 | 2 | .1 |
| 28 | .8 | .8 | .8 | 3 | 12 | 13 | 3 | 1.5 | .4 | 1.5 | .1 |
| 29 | .8 | 1 | .8 | 3 | ..... | 10 | 3 | 1.5 | .4 | 1.5 | .1 |
| 30 | .8 | 1.5 | .8 | 3 | ..... | 10 | 3 | 1.5 | .4 | 1.5 | .1 |
| 31 | .8 | ..... | .8 | 3 | ..... | 10 | ..... | 1 | ..... | 1.5 | ..... |

NOTE.—Daily discharge determined from poorly defined rating curves applicable as follows: Oct. 1 to Jan. 15, 1912 and 1913; Jan. 16 to Feb. 22 and Mar. 25 to Sept. 11, 1912 and 1913; and Sept. 14 to 30. Indirect method for shifting channels used Feb. 23 to Mar. 24, and Sept. 12 and 13, 1912 and 1913. Discharge estimated Nov. 9 to 13, Feb 16, Mar. 17, Apr. 1 to 14, and Apr. 16 to 22. Water standing in pools, no flow, July 1 to Aug. 16.

*Monthly discharge of Sweetwater River near Descanso, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 2.0 | 0.6 | 0.86 | 53 | D. |
| November | 1.5 | .8 | .83 | 49 | D. |
| December | 1.0 | .8 | .92 | 57 | D. |
| January | 16 | .8 | 3.51 | 216 | C. |
| February | 52 | 3.0 | 9.09 | 505 | C. |
| March | 27 | 4.5 | 12.2 | 750 | C. |
| April | 9.5 | 3.0 | 5.58 | 332 | C. |
| May | 3.0 | 1.0 | 1.48 | 91 | C. |
| June | 1.0 | .4 | .70 | 42 | C. |
| July | .0 | .0 | .00 | 0 | D. |
| August | 3.0 | .0 | .84 | 52 | D. |
| September | 43 | .1 | 2.87 | 171 | D. |
| The year | 52 | .0 | 3.21 | 2,320 | |

## SAN DIEGO RIVER BASIN.

### SAN DIEGO RIVER AT DIVERTING DAM NEAR LAKESIDE, CAL.

LOCATION.—In the NE. ¼ NE. ¼ sec. 11, T. 14 S., R. 2 E., at diverting dam for San Diego flume, about 1,000 feet below mouth of Boulder Creek, and about 13 miles northeast of Lakeside.

RECORDS AVAILABLE.—October 1, 1912, to September 30, 1913.

DRAINAGE AREA.—102 square miles; measured on topographic maps.

GAGE.—Friez water-stage recorder on left bank at dam. A vertical staff is fastened on the outside of gage well.

CHANNEL.—Shifting sand above or below dam.

DISCHARGE MEASUREMENTS.—Made from cable one-fourth mile below dam or by wading.

REGULATION.—See Boulder Creek at Cuyamaca reservoir near Julian.

ACCURACY.—Rating curve prepared from measurements in 1914 and is well defined; record shows flow over dam and is good.

COOPERATION.—Maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

The following discharge measurement was made by W. S. Post:
January 16, 1913: Gage height, 9.82 feet; discharge, 60 second-feet.

*Daily gage height, in feet, and discharge, in second-feet, of San Diego River at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | | Feb. | | Mar. | | Apr. | Day. | Jan. | | Feb. | | Mar. | | Apr. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Discharge. |
| 1 | ..... | ..... | ..... | ..... | 9.5 | 2 | ..... | 16 | ..... | 27 | ..... | ..... | ..... | 3 | ..... |
| 2 | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 17 | 9.7 | 28 | ..... | ..... | ..... | ..... | ..... |
| 3 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 18 | 9.6 | 10 | ..... | ..... | ..... | ..... | ..... |
| 4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 19 | 9.55 | 5 | ..... | ..... | ..... | ..... | ..... |
| 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 20 | 9.5 | 2 | ..... | ..... | ..... | 1 | ..... |
| 6 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 21 | ..... | .5 | ..... | 2 | ..... | ..... | ..... |
| 7 | ..... | ..... | 9.5 | 2 | ..... | ..... | ..... | 22 | ..... | ..... | 9.85 | 70 | ..... | 6 | ..... |
| 8 | ..... | ..... | ..... | .5 | ..... | ..... | ..... | 23 | ..... | ..... | 9.6 | 10 | ..... | 10 | 2.4 |
| 9 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 24 | ..... | ..... | 9.5 | 2 | ..... | .5 | ..... |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 25 | ..... | ..... | 9.8 | 55 | 9.55 | 5 | ..... |
| 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 26 | ..... | ..... | 9.75 | 40 | ..... | 5 | ..... |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 27 | ..... | ..... | 9.8 | 55 | ..... | ..... | ..... |
| 13 | ..... | ..... | ..... | ..... | ..... | 4 | ..... | 28 | ..... | ..... | 9.7 | 28 | ..... | ..... | .1 |
| 14 | ..... | ..... | ..... | ..... | ..... | 1 | ..... | 29 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | | | | | | | | 31 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

NOTE.—Water flowing over dam only part of day on the following dates: Jan. 16, 21, Feb. 8, 21, Mar. 13, 14, 16, 20 to 24, 26, and Apr. 2, 3, 1913. Water below crest of spillway on other days for which gage height is not recorded. Sand gates open Apr. 23 and 28 part of the day.

Daily discharge determined from well-defined rating curve based on point of zero flow over spillway (gage height 9.42 feet), one measurement made in 1913 and two measurements in 1914. Discharge estimated when water was flowing over spillway only part of the day, and Apr. 23 and 28, when sand gates were open part of the day. No flow on days for which discharge is not given.

*Monthly discharge of San Diego River at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0.0 | 0 | 0.00 | 0 | |
| November | .0 | 0 | .00 | 0 | |
| December | .0 | 0 | .00 | 0 | |
| January | 28 | 0 | 2.34 | 144 | C. |
| February | 70 | 0 | 9.45 | 562 | B. |
| March | 10 | 0 | 1.21 | 74 | |
| April | 2.4 | 0 | .18 | 11 | |
| May | .0 | 0 | .00 | 0 | |
| June | .0 | 0 | .00 | 0 | |
| July | .0 | 0 | .00 | 0 | |
| August | .0 | 0 | .00 | 0 | |
| September | .0 | 0 | .00 | 0 | |
| The year | | | 1.04 | 791 | |

## SAN DIEGO RIVER AT LAKESIDE, CAL.

LOCATION.—On the El Cajon grant, just above ford on Lakeside-Padre Barona Valley road, three-fourths of a mile above Cuyamaca & Eastern Railroad bridge, and three-fourths of a mile north of Lakeside.

RECORDS AVAILABLE.—December 3, 1905, to September 30, 1913.

DRAINAGE AREA.—203 square miles, revised estimate; area measured on topographic maps.

GAGE.—Staff in three sections on left bank 100 feet above ford.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—San Diego flume heads at diverting dam about 1,000 feet below Boulder Creek and about 15 miles above the station. Several pumping plants, 1 to 3 miles above the station, obtain water for irrigation from wells along the banks of the stream. Cuyamaca Reservoir, on the headwaters of Boulder Creek, has a capacity of 11,400 acre-feet. (See also Boulder Creek at Cuyamaca Reservoir.)

ACCURACY.—Daily discharge computed by indirect method for shifting channels; results fair.

*Discharge measurements of San Diego River at Lakeside, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 15 | F. C. Ebert | 2.77 | 34 | Apr. 15 | F. C. Ebert | 2.56 | 1.5 |
| 16 | do | 2.60 | 12 | 17 | H. D. McGlashan | 2.52 | 1.2 |
| 17 | do | 2.65 | 15 | May 12 | F. C. Ebert | 2.42 | *a* .2 |
| 18 | do | 2.62 | 9.2 | | | | |

*a* Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of San Diego River at Lakeside, Cal., for the year ending Sept. 30, 1913.*

[J. H. Beadle, observer.]

| Day. | January. | | February. | | March. | | April. | | May. | | June. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. |
| 1 | | | | | 2.8 | 30 | 2.7 | 12 | 2.45 | 0.2 | 2.35 |
| 2 | | | | | 2.8 | 30 | 2.75 | 16 | 2.45 | .2 | 2.35 |
| 3 | | | | | 2.7 | 25 | 2.75 | 16 | 2.45 | .2 | 2.35 |
| 4 | | | | | 2.6 | 15 | 2.7 | 11 | 2.45 | .2 | 2.35 |
| 5 | | | | | 2.6 | 15 | 2.7 | 11 | 2.45 | .2 | 2.35 |
| 6 | | | | | 2.7 | 25 | 2.7 | 11 | 2.45 | .2 | 2.3 |
| 7 | | | | | 2.65 | 20 | 2.7 | 11 | 2.45 | .2 | 2.3 |
| 8 | | | | | 2.6 | 15 | 2.65 | 7 | 2.5 | .5 | 2.3 |
| 9 | | | 2.5 | 0 | 2.6 | 15 | 2.65 | 7 | 2.45 | .2 | 2.3 |
| 10 | | | | | 2.5 | 10 | 2.7 | 10 | 2.45 | .2 | 2.3 |
| 11 | | | | | 2.5 | 10 | 2.65 | 7 | 2.45 | .2 | 2.3 |
| 12 | | | | | 2.55 | 15 | 2.65 | 7 | 2.45 | .2 | 2.3 |
| 13 | 1.9 | 0 | | | 2.7 | 25 | 2.55 | 1.5 | 2.45 | .2 | 2.3 |
| 14 | | | | | 2.8 | 35 | 2.6 | 2.0 | 2.45 | .2 | 2.3 |
| 15 | | | 2.6 | .3 | 2.8 | 35 | 2.55 | 1.5 | 2.45 | .2 | 2.3 |
| 16 | | | | | 2.6 | 12 | 2.5 | 1.0 | 2.40 | .2 | |
| 17 | 2.1 | 0 | | | 2.6 | 15 | 2.5 | 1.0 | 2.45 | .2 | |
| 18 | | | | | 2.6 | 9 | 2.5 | 1.0 | 2.45 | .2 | |
| 19 | | | | | 2.5 | 3 | 2.55 | 1.5 | 2.45 | .2 | |
| 20 | | | | | 2.6 | 8 | 2.5 | 1.0 | 2.45 | .2 | |
| 21 | | | | | 2.7 | 17 | 2.5 | 1.0 | 2.4 | .2 | |
| 22 | | | 2.6 | 0 | 2.8 | 25 | 2.5 | 1.0 | 2.35 | .1 | |
| 23 | | | | | 2.65 | 10 | 2.45 | .5 | 2.3 | .0 | |
| 24 | | | | | 2.8 | 24 | 2.45 | .5 | 2.2 | .0 | |
| 25 | | | 2.7 | 1 | 2.9 | 36 | 2.45 | .5 | 2.3 | .0 | |
| 26 | | | 3.2 | 40 | 2.95 | 42 | 2.5 | .5 | 2.3 | .0 | |
| 27 | | | 2.85 | 25 | 2.8 | 23 | 2.5 | .5 | 2.3 | .0 | |
| 28 | 2.35 | 0 | 3.1 | 40 | 2.8 | 23 | 2.45 | .3 | 2.3 | .0 | |
| 29 | | | | | 2.7 | 13 | 2.45 | .3 | 2.3 | .0 | |
| 30 | | | | | 2.7 | 13 | 2.45 | .3 | 2.35 | .0 | |
| 31 | | | | | 2.65 | 8 | | | 2.35 | .0 | |

NOTE.—River did not begin to flow freely until Feb. 25, 1913; gage heights prior to that date represent ground water levels; stream dry June 16 to Sept. 30, 1913.

Daily discharge determined by indirect method for shifting channels Feb. 25 to June 15, 1913. Discharge estimated Feb. 15. Discharge tabulated Feb. 25 to Mar. 14 approximate.

*Monthly discharge of San Diego River at Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | | | 0 | 0 | |
| November | | | 0 | 0 | |
| December | | | 0 | 0 | |
| January | | | 0 | 0 | |
| February | 40 | 0.0 | 3.80 | 211 | |
| March | 42 | 3 | 19.4 | 1,190 | C. |
| April | 16 | .3 | 4.73 | 281 | C. |
| May | 0.2 | 0.0 | .15 | 9 | D. |
| June | | | 0 | 0 | |
| July | | | 0 | 0 | |
| August | | | 0 | 0 | |
| September | | | 0 | 0 | |
| The year | 42 | 0.0 | 2.34 | 1,690 | |

NOTE.—Estimates for February only approximate.

*Total monthly discharge of San Diego River and flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 11 | 0.2 | 3.81 | 234 | B. |
| November | 3.3 | 2.0 | 2.47 | 147 | B. |
| December | 3.1 | .7 | 2.29 | 141 | B. |
| January | 7.5 | .0 | 3.97 | 244 | B. |
| February | 48 | 2.1 | 8.69 | 483 | D. |
| March | 52 | 14 | 28.9 | 1,780 | B. |
| April | 26 | 5.5 | 15.6 | 928 | B. |
| May | 7.7 | 1.9 | 3.62 | 223 | C. |
| June | 7.3 | 2.8 | 4.86 | 289 | B. |
| July | 6.6 | 2.6 | 4.80 | 295 | B. |
| August | 3.6 | 1.8 | 2.62 | 161 | B. |
| September | 3.0 | .7 | 1.89 | 112 | B. |
| The year | 52 | .0 | 6.95 | 5,040 | |

## SAN DIEGO RIVER NEAR SANTEE, CAL.

LOCATION.—At old Mission dam, on tract T, El Cajon grant, just above Oak Canyon, and about 4½ miles west of Santee.

RECORDS AVAILABLE.—May 25, 1912, to September 30, 1913.

DRAINAGE AREA.—375 square miles; measured on topographic maps.

GAGE.—Staff in three sections: Lowest section is bolted to upstream face of old dam to the right of the break; other sections are on left bank just above dam. Also Bristol water-stage recorder during certain periods.

CHANNEL.—Shifting sand. The old dam serves as a partial control. On May 10, 1913, a concrete weir, with a steel plate for the crest, was installed at the old break in the dam.

DISCHARGE MEASUREMENTS.—Made from cable about 500 feet above gage or by wading.

DIVERSIONS.—See San Diego River at Lakeside. Water for irrigation is pumped from wells along the river below Lakeside.

ACCURACY.—Results fair.

COOPERATION.—Station maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of San Diego River near Santee, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 16 | Taylor and Harriett | 7.30 | *a* 0.1 | Mar. 14 | F. C. Ebert | 7.63 | 25 |
| 19 | F. C. Ebert | 7.31 | *a*. 3 | 17 | do | 7.40 | 14 |
| Feb. 13 | W. S. Post | 7.22 | *a*. 3 | Apr. 12 | do | 7.14 | .6 |
| 28 | E. W. Case | 7.79 | 26 | 17 | H. D. McGlashan | 7.07 | *a*. 2 |
| Mar. 11 | do | 7.23 | 5.4 | | | | |

*a* Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of San Diego River near Santee, Cal., for 1912–13.*

[C. C. Sherman, observer.]

| Day. | Oct. | Nov. | Dec. | | Jan. | | Feb. | | Mar. | | Apr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Gage height. | Gage height. | Dis-charge. | Gage height. | Dis-charge. | Gage height. | Dis-charge. | Gage height. | Dis-charge. | Gage height. | Dis-charge. |
| 1 | ..... | ..... | ..... | ..... | 7.3 | 0.3 | 7.6 | .14 | 7.8 | 26 | 7.65 | 28 |
| 2 | ..... | 7.2 | ..... | ..... | 7.3 | .3 | 7.4 | 5 | 7.6 | 16 | 7.6 | 24 |
| 3 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.4 | 5 | 7.45 | 9 | 7.6 | 24 |
| 4 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.35 | 4 | 7.4 | 8 | 7.55 | 21 |
| 5 | 7.1 | ..... | ..... | ..... | 7.3 | .3 | 7.4 | 5 | 7.4 | 8 | 7.5 | 18 |
| 6 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.45 | 7 | 7.4 | 8 | ..... | 16 |
| 7 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.4 | 5 | ..... | 6 | ..... | 14 |
| 8 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.4 | 5 | ..... | 6 | ..... | 10 |
| 9 | ..... | 7.2 | ..... | ..... | 7.3 | .3 | 7.3 | 2 | ..... | 5 | ..... | 6 |
| 10 | ..... | ..... | ..... | ..... | 7.3 | .3 | 7.2 | .3 | ..... | 5 | ..... | 3 |
| 11 | ..... | ..... | ..... | ..... | 7.25 | .2 | 7.2 | .3 | 7.25 | 5 | ..... | 1 |
| 12 | 7.1 | ..... | ..... | ..... | ..... | .2 | 7.15 | .2 | ..... | 12 | 7.15 | .6 |
| 13 | ..... | ..... | ..... | ..... | 7.25 | .2 | 7.4 | 5 | 7.5 | 18 | ..... | .6 |
| 14 | ..... | ..... | ..... | ..... | 7.25 | .2 | 7.45 | 7 | 7.7 | 31 | ..... | .4 |
| 15 | ..... | ..... | ..... | ..... | 7.25 | .2 | 7.55 | 12 | 7.65 | 28 | ..... | .4 |
| 16 | ..... | 7.2 | 7.3 | 0.1 | 7.25 | .2 | 7.2 | .3 | 7.4 | 12 | ..... | .2 |
| 17 | ..... | ..... | ..... | ..... | 7.25 | .2 | ..... | .3 | 7.35 | 10 | 7.05 | .2 |
| 18 | ..... | ..... | ..... | ..... | 7.25 | .2 | ..... | .3 | 7.3 | 7 | ..... | .2 |
| 19 | 7.2 | ..... | 7.3 | .3 | 7.25 | .2 | ..... | .2 | 7.2 | 3 | ..... | .2 |
| 20 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .2 | 7.2 | 3 | ..... | .2 |
| 21 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .2 | 7.25 | 5 | ..... | .2 |
| 22 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.35 | 10 | ..... | .1 |
| 23 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.35 | 10 | ..... | .1 |
| 24 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.8 | 38 | ..... | .1 |
| 25 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.8 | 38 | ..... | .1 |
| 26 | 7.2 | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.9 | 46 | ..... | .1 |
| 27 | ..... | ..... | ..... | ..... | ..... | .2 | ..... | .1 | 7.8 | 38 | ..... | .1 |
| 28 | ..... | ..... | ..... | ..... | 7.35 | 4 | 7.8 | 26 | 7.65 | 28 | ..... | .1 |
| 29 | ..... | ..... | 7.3 | .3 | 7.4 | 5 | ..... | ..... | 7.65 | 28 | ..... | .1 |
| 30 | ..... | ..... | 7.3 | .3 | 7.55 | 12 | ..... | ..... | 7.75 | 34 | ..... | .1 |
| 31 | ..... | ..... | 7.3 | .3 | 7.8 | 26 | ..... | ..... | 7.7 | 31 | ..... | ..... |

NOTE.—Stream practically dry during October, November, and December, 1912, and May to September, 1913.

Daily discharge determined as follows: Jan. 28 to Feb. 28, 1913, from poorly defined rating curves; Mar. 1 to 10, 1913, by indirect method for shifting channels; Mar. 11 to Apr. 5, 1913, from fairly well defined rating curves; Apr. 6 to 30, estimated.

*Monthly discharge of San Diego River near Santee, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | ..... | ..... | [a]0.05 | 3 | |
| November | ..... | ..... | [a].1 | 6 | |
| December | ..... | ..... | [a].2 | 12 | |
| January | 26 | 0.2 | 1.72 | 106 | D. |
| February | 26 | .1 | 3.75 | 208 | D. |
| March | 46 | 3 | 17.2 | 1,060 | C. |
| April | 28 | .1 | 5.64 | 336 | C. |
| May | ..... | ..... | [a].05 | 3 | |
| June | ..... | ..... | [a].05 | 3 | |
| July | ..... | ..... | [a].05 | 3 | |
| August | ..... | ..... | [a].05 | 3 | |
| September | ..... | ..... | [a].05 | 3 | |
| The year | ..... | ..... | ..... | 1,750 | |

[a] Estimated.

## SAN DIEGO RIVER AT SAN DIEGO, CAL.

LOCATION.—At lower highway bridge, in block 391, Old Town subdivision, San Diego, about 1½ miles above mouth.

RECORDS AVAILABLE.—October 1, 1912, to September 30, 1913.

DRAINAGE AREA.—434 square miles; measured on topographic maps.

GAGE.—Staff in two sections on left bank just below new concrete bridge.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

DIVERSIONS.—See San Diego River near Santee. Record at this station shows amount of water wasted into Pacific Ocean.

ACCURACY.—Rating curve well defined; results good.

COOPERATION.—Station maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of San Diego River at San Diego, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 14 | F. C. Ebert | | Dry. | Apr. 8 | E. W. Case | 6.25 | 1.1 |
| 26 | W. S. Post | 6.44 | 7.6 | 14 | F. C. Ebert | 6.01 | *a*.05 |
| 28 | E. W. Case | 6.64 | 15 | | | | |

*a* Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of San Diego River at San Diego, Cal., for the year ending Sept. 30, 1913.*

[William Parker, observer.]

| Day. | March. | | April. | | Day. | March. | | April. | |
|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | 6.35 | 4 | 16 | | | 5.75 | |
| 2 | | | 6.4 | 5 | 17 | | | 5.75 | |
| 3 | | | 6.35 | 4 | 18 | | | 5.75 | |
| 4 | | | 6.3 | 2 | 19 | | | 5.75 | |
| 5 | | | 6.2 | .4 | 20 | | | 5.75 | |
| 6 | | | 6.2 | .4 | 21 | | | 5.75 | |
| 7 | | | 6.9 | 30 | 22 | | | 5.75 | |
| 8 | | | 6.0 | .05 | 23 | | | 5.75 | |
| 9 | | | 6.0 | .05 | 24 | | | 5.75 | |
| 10 | | | 6.0 | .05 | 25 | | | | |
| 11 | | | 6.0 | .05 | 26 | 6.3 | 2 | 5.75 | |
| 12 | | | 6.0 | .05 | 27 | 6.55 | 11 | 5.75 | |
| 13 | | | 6.0 | .05 | 28 | 6.7 | 18 | 5.75 | |
| 14 | | | 6.0 | .05 | 29 | 6.65 | 16 | 5.75 | |
| 15 | | | 6.0 | .05 | 30 | 6.4 | 5 | 5.75 | |
| | | | | | 31 | 6.3 | 2 | | |

NOTE.—Stream dry except Mar. 26 to Apr. 30, 1913. Mean discharge for March, 1.7 second-feet (105 acre-feet); April, 1.54 second-feet (92 acre-feet).

## BOULDER CREEK AT CUYAMACA RESERVOIR, NEAR JULIAN,[1] CAL.

LOCATION.—100 feet below outlet gates of Cuyamaca reservoir, in Cuyamaca grant, 12 miles above mouth of Boulder Creek, 7 miles south of Julian, and 22 miles northeast of Lakeside.

RECORDS AVAILABLE.—June 19, 1912, to September 30, 1913.

[1] Formerly described as "near Lakeside."

DRAINAGE AREA.—12.0 square miles; measured on topographic maps.

GAGE.—Vertical staff on right side of short flume 3½ feet above 6-foot Cippoletti weir. Zero of gage is at same elevation as crest of weir.

DISCHARGE MEASUREMENTS.—Made by wading 50 feet below weir.

DIVERSION AND STORAGE.—The Cuyamaca dam, completed in 1886, was one of the first earth dams built in California for irrigation storage. The height as originally constructed was 35 feet. In 1894 the dam was enlarged, increasing the capacity of the reservoir to 11,400 acre-feet. The present dam is 635 feet long and 41½ feet high, having an inner slope of 2:1 and an outer slope of 1½:1. From the reservoir the water flows down the natural channel of Boulder Creek and San Diego River to the intake of San Diego flume, a distance of 12½ miles. The San Diego flume is more than 30 miles long, 6 feet wide, and 16 inches deep, and its capacity is about 16 second-feet. It discharges into La Mesa reservoir, about 8 miles northeast of San Diego. This system supplied the city of San Diego with water until 1906, when the Southern California Mountain Water Co. extended its system to the city. It now supplies water for irrigation and domestic service. Area irrigated is about 4,000 acres. Seven per cent of the flow is used for domestic service. Water from the South Fork of San Diego River is diverted into this flume. The Capitan Grande Indian Reservation has a water right of 0.8 second-foot from this flume.

ACCURACY.—Rating curve is well defined; results are excellent.

COOPERATION.—Weir installed and gage-height record furnished by Cuyamaca Water Co. through W. S. Post, engineer.

No discharge measurement made during the year.

*Daily gage height, in feet, of Boulder Creek at Cuyamaca Reservoir, near Julian, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.25 | 0.19 | ..... | 0.17 | ..... | 0.12 | 0.46 | 0.38 | 0.19 |
| 2 | .25 | .19 | ..... | .17 | ..... | .12 | .46 | .38 | .19 |
| 3 | ..... | .19 | 0.08 | .17 | ..... | .12 | .46 | .38 | .19 |
| 4 | ..... | .19 | 08 | 17 | ..... | .12 | .46 | .38 | .33 |
| 5 | ..... | .19 | .08 | .17 | ..... | .12 | .46 | .38 | .19 |
| 6 | ..... | .19 | .08 | .17 | ..... | .12 | .46 | .38 | .19 |
| 7 | ..... | .19 | .08 | .17 | ..... | .17 | 46 | 38 | .44 |
| 8 | ..... | .19 | .08 | .17 | ..... | .21 | .54 | .38 | .44 |
| 9 | ..... | .19 | .08 | .08 | ..... | .21 | .54 | .38 | .44 |
| 10 | ..... | .19 | .08 | ..... | ..... | .21 | .54 | .38 | .25 |
| 11 | .17 | .19 | .08 | ..... | ..... | .21 | .54 | .38 | .42 |
| 12 | .29 | .19 | .08 | ..... | ..... | .38 | .54 | .38 | .42 |
| 13 | .38 | .19 | .08 | ..... | ..... | .38 | .54 | .38 | .42 |
| 14 | .38 | .19 | .08 | ..... | ..... | .38 | .54 | .38 | .42 |
| 15 | .33 | .19 | .08 | ..... | ..... | .38 | .54 | .38 | .42 |
| 16 | .33 | .19 | .08 | ..... | ..... | .46 | .54 | .38 | .42 |
| 17 | .33 | .19 | .08 | ..... | ..... | .46 | .54 | .33 | .33 |
| 18 | .33 | .19 | .08 | ..... | ..... | .46 | .54 | .38 | .33 |
| 19 | .33 | .19 | .08 | ..... | ..... | .50 | .54 | .42 | .33 |
| 20 | .25 | .19 | .08 | ..... | ..... | .54 | .54 | .42 | .33 |
| 21 | .25 | .19 | .08 | ..... | ..... | .54 | .54 | .35 | .33 |
| 22 | .25 | .19 | .08 | ..... | 0.08 | .58 | .42 | .35 | .33 |
| 23 | .25 | .19 | .08 | ..... | .08 | .58 | .42 | .35 | .33 |
| 24 | .25 | .19 | .08 | ..... | .08 | .58 | .33 | .35 | .33 |
| 25 | .25 | .19 | .08 | ..... | .08 | .58 | .33 | .35 | .33 |
| 26 | .25 | .19 | .08 | ..... | .08 | .58 | .33 | .35 | .33 |
| 27 | .27 | .19 | .08 | ..... | .12 | .33 | .33 | .35 | .33 |
| 28 | .27 | .19 | .08 | ..... | .12 | .33 | .33 | .35 | .33 |
| 29 | .27 | .19 | .17 | ..... | .12 | ..... | .38 | .35 | .33 |
| 30 | .27 | .19 | .17 | ..... | .12 | .46 | .38 | .35 | ..... |
| 31 | .19 | ..... | .17 | ..... | .12 | ..... | .38 | .35 | ..... |

NOTE.—Water was shut off at reservoir on days for which gage height is not recorded, except June 29 and Sept. 30.

*Daily discharge, in second-feet, of Boulder Creek at Cuyamaca Reservoir, near Julian, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.7 | 2.4 | 0 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 2.4 |
| 2 | 3.7 | 2.4 | 0 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 2.4 |
| 3 | 0 | 2.4 | .8 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 2.4 |
| 4 | 0 | 2.4 | .8 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 5.5 |
| 5 | 0 | 2.4 | .8 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 2.4 |
| 6 | 0 | 2.4 | .8 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 2.4 |
| 7 | 0 | 2.4 | .8 | 2.1 | ..... | 2.1 | 8.5 | 6.6 | 8.0 |
| 8 | 0 | 2.4 | .8 | 2.1 | ..... | 2.8 | 10.6 | 6.6 | 8.0 |
| 9 | 0 | 2.4 | .8 | .8 | ..... | 2.8 | 10.6 | 6.6 | 8.0 |
| 10 | 0 | 2.4 | .8 | ..... | ..... | 2.8 | 10.6 | 6.6 | 3.7 |
| 11 | 2.1 | 2.4 | .8 | ..... | ..... | 2.8 | 10.6 | 6.6 | 7.5 |
| 12 | 4.6 | 2.4 | .8 | ..... | ..... | 6.8 | 10.6 | 6.6 | 7.5 |
| 13 | 6.6 | 2.4 | .8 | ..... | ..... | 6.8 | 10.6 | 6.6 | 7.5 |
| 14 | 6.6 | 2.4 | .8 | ..... | ..... | 6.8 | 10.6 | 6.6 | 7.5 |
| 15 | 5.5 | 2.4 | .8 | ..... | ..... | 6.8 | 10.6 | 6.6 | 7.5 |
| 16 | 5.5 | 2.4 | .8 | ..... | ..... | 8.5 | 10.6 | 6.6 | 7.5 |
| 17 | 5.5 | 2.4 | .8 | ..... | ..... | 8.5 | 10.6 | 6.6 | 5.5 |
| 18 | 5.5 | 2.4 | .8 | ..... | ..... | 8.5 | 10.6 | 6.6 | 5.5 |
| 19 | 5.5 | 2.4 | .8 | ..... | ..... | 9.5 | 10.6 | 7.5 | 5.5 |
| 20 | 3.7 | 2.4 | .8 | ..... | ..... | 10.6 | 10.6 | 7.5 | 5.5 |
| 21 | 3.7 | 2.4 | .8 | ..... | ..... | 10.6 | 10.6 | 5.9 | 5.5 |
| 22 | 3.7 | 2.4 | .8 | ..... | 0.8 | 12 | 7.5 | 5.9 | 5.5 |
| 23 | 3.7 | 2.4 | .8 | ..... | .8 | 12 | 7.5 | 5.9 | 5.5 |
| 24 | 3.7 | 2.4 | .8 | ..... | .8 | 12 | 5.5 | 5.9 | 5.5 |
| 25 | 3.7 | 2.4 | .8 | ..... | .8 | 12 | 5.5 | 5.9 | 5.5 |
| 26 | 3.7 | 2.4 | .8 | ..... | .8 | 12 | 5.5 | 5.9 | 5.5 |
| 27 | 4.1 | 2.4 | .8 | ..... | 1.3 | 5.5 | 5.5 | 5.9 | 5.5 |
| 28 | 4.1 | 2.4 | .8 | ..... | 1.3 | 5.5 | 5.5 | 5.9 | 5.5 |
| 29 | 4.1 | 2.4 | 2.1 | ..... | 1.3 | 7.0 | 6.6 | 5.9 | 5.5 |
| 30 | 4.1 | 2.4 | 2.1 | ..... | 1.3 | 8.5 | 6.6 | 5.9 | 5.5 |
| 31 | 2.4 | ..... | 2.1 | ..... | 1.3 | ..... | 6.6 | 5.9 | ..... |

NOTE.—Daily discharge determined from a well defined rating curve. Discharge interpolated June 29 and Sept. 30. No flow Jan. 10 to May 21.

*Monthly discharge of Boulder Creek at Cuyamaca Reservoir, near Julian, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 6.6 | 0.0 | 3.21 | 197 | A. |
| November | 2.4 | 2.4 | 2.40 | 143 | B. |
| December | 2.1 | .0 | .87 | 53 | D. |
| January | 2.1 | .0 | .57 | 35 | D. |
| February | .0 | .0 | .00 | 0 | |
| March | .0 | .0 | .00 | 0 | |
| April | .0 | .0 | .00 | 0 | |
| May | 1.3 | .0 | .34 | 21 | D. |
| June | 12 | 1.3 | 6.37 | 379 | A. |
| July | 10.6 | 5.5 | 8.72 | 536 | A. |
| August | 7.5 | 5.9 | 6.41 | 394 | A. |
| September | 8 | 2.4 | 5.57 | 331 | A. |
| The year | 12 | .0 | 2.89 | 2,090 | |

## BOULDER CREEK AT MOUTH, NEAR LAKESIDE, CAL.

LOCATION.—In the NW. ¼ sec. 12, T. 14 S., R. 2 E., 300 feet above junction with San Diego River, about 14 miles northeast of Lakeside.

RECORDS AVAILABLE.—August 12, 1912, to September 30, 1913.

DRAINAGE AREA.—33.5 square miles; measured on topographic maps.

GAGE.—Vertical staff in flume 8 feet above weir. When weir board is not in use a vertical staff on left bank in pool above weir is read.

DISCHARGE MEASUREMENTS.—Made from foot plank over flume when weir board is not in use.

STORAGE.—While water is being stored at Cuyamaca Reservoir, 12 miles above the station, the record shows only the run-off from the drainage area below the reservoir. A comparison of the flow at the outlet of the reservoir and at the mouth during the release of stored water will show approximately the loss by evaporation and seepage. There is practically no run-off from the intervening drainage area during the summer season. See also Boulder Creek at Cuyamaca Reservoir, near Lakeside, Cal.

ACCURACY.—The weir is especially well constructed and results are excellent. On November 9, 1912, weir board was removed and since that date all gage readings refer to the upper gage. The rating curve for the flume is well defined. During the irrigation season the gage is read three times a day. For the remainder of the year daily readings are secured.

COOPERATION.—Weir installed and gage-height record furnished by Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of Boulder Creek at mouth, near Lakeside, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 2 | F. C. Ebert | 0.31 | [a] 3.4 | Feb. 16 | F. C. Ebert | 1.03 | 2.0 |
| Jan. 12 | W. S. Post | 1.06 | 2.2 | 26 | E. W. Case | 1.62 | 18 |
| 16 | do | 1.56 | 15 | Mar. 15 | F. C. Ebert | 1.40 | 12 |
| 22 | F. C. Ebert | 1.10 | 3.4 | May 13 | do | .93 | 1.8 |

[a] Measured by weir.

*Daily gage height, in feet, of Boulder Creek at mouth, near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.29 | 0.35 | 1.21 | 1.00 | 1.06 | 1.45 | 1.35 | 1.10 | 1.08 | 1.20 | 1.10 | 1.05 |
| 2 | .29 | .29 | 1.12 | 1.09 | 1.06 | 1.49 | 1.40 | 1.10 | 1.07 | 1.19 | 1.10 | 1.02 |
| 3 | .31 | .32 | 1.06 | 1.11 | 1.05 | 1.32 | 1.40 | 1.10 | 1.07 | 1.19 | 1.10 | 1.01 |
| 4 | .57 | .36 | 1.06 | 1.11 | 1.05 | 1.40 | 1.38 | 1.09 | 1.07 | 1.20 | 1.17 | 1.07 |
| 5 | .52 | .34 | 1.10 | 1.09 | 1.05 | 1.50 | 1.32 | 1.09 | 1.06 | 1.20 | 1.17 | 1.00 |
| 6 | .54 | .34 | 1.06 | 1.09 | 1.09 | 1.40 | 1.30 | 1.09 | 1.06 | 1.19 | 1.10 | 1.00 |
| 7 | .31 | .34 | 1.06 | 1.09 | 1.09 | 1.55 | 1.30 | 1.09 | 1.05 | 1.19 | 1.10 | 1.16 |
| 8 | .23 | .30 | 1.05 | 1.08 | 1.14 | 1.50 | 1.28 | 1.09 | 1.07 | 1.26 | 1.11 | 1.17 |
| 9 | .20 | 1.08 | 1.05 | 1.08 | 1.15 | 1.55 | 1.24 | 1.09 | 1.08 | 1.24 | 1.12 | 1.17 |
| 10 | .19 | 1.11 | 1.04 | 1.09 | 1.11 | 1.40 | 1.25 | 1.07 | 1.11 | 1.24 | 1.11 | 1.05 |
| 11 | .18 | 1.15 | 1.05 | 1.11 | 1.08 | 1.37 | 1.20 | 1.07 | 1.11 | 1.25 | 1.12 | .95 |
| 12 | .21 | 1.16 | 1.05 | 1.08 | 1.09 | 1.50 | 1.20 | 1.04 | 1.12 | 1.22 | 1.11 | 1.16 |
| 13 | .35 | 1.15 | 1.05 | 1.06 | 1.09 | 1.50 | 1.20 | .97 | 1.19 | 1.24 | 1.11 | 1.18 |
| 14 | .47 | 1.10 | 1.05 | 1.03 | 1.09 | 1.50 | 1.20 | .99 | 1.19 | 1.30 | 1.11 | 1.18 |
| 15 | .38 | 1.11 | 1.04 | 1.03 | 1.09 | 1.45 | 1.25 | .94 | 1.22 | 1.28 | 1.11 | 1.18 |
| 16 | .40 | 1.09 | 1.06 | 1.44 | 1.03 | 1.40 | 1.21 | .93 | 1.24 | 1.28 | 1.11 | 1.12 |
| 17 | .40 | 1.08 | 1.04 | 1.40 | 1.03 | 1.32 | 1.20 | .93 | 1.25 | 1.27 | 1.12 | 1.10 |
| 18 | .41 | 1.07 | 1.04 | 1.35 | 1.02 | 1.30 | 1.18 | .91 | 1.25 | 1.30 | 1.12 | 1.09 |
| 19 | .47 | 1.08 | 1.06 | 1.22 | 1.02 | 1.30 | 1.20 | .91 | 1.27 | 1.30 | 1.18 | 1.10 |
| 20 | .41 | 1.08 | 1.04 | 1.17 | 1.04 | 1.32 | 1.19 | .95 | 1.25 | 1.30 | 1.21 | 1.10 |
| 21 | .40 | 1.08 | 1.04 | 1.15 | 1.09 | 1.40 | 1.18 | .94 | 1.25 | 1.20 | 1.14 | 1.10 |
| 22 | .41 | 1.06 | 1.05 | 1.10 | 1.90 | 1.35 | 1.15 | .95 | 1.25 | 1.17 | 1.14 | 1.10 |
| 23 | .40 | 1.03 | 1.02 | 1.10 | 1.87 | 1.62 | 1.16 | 1.05 | 1.35 | 1.15 | 1.13 | 1.11 |
| 24 | .38 | 1.07 | 1.04 | 1.05 | 1.32 | 1.60 | 1.15 | 1.05 | 1.30 | 1.15 | 1.13 | 1.15 |
| 25 | .40 | 1.07 | 1.05 | 1.05 | 1.15 | 1.50 | 1.10 | 1.00 | 1.30 | 1.05 | 1.13 | 1.14 |
| 26 | .41 | 1.08 | 1.04 | 1.05 | 1.89 | 1.53 | 1.10 | 1.00 | 1.30 | 1.10 | 1.15 | ..... |
| 27 | .40 | 1.06 | 1.03 | 1.06 | 1.70 | 1.47 | 1.12 | 1.00 | 1.33 | 1.10 | 1.15 | ..... |
| 28 | .41 | 1.06 | 1.01 | 1.07 | 1.65 | 1.40 | 1.10 | 1.03 | 1.22 | 1.20 | 1.13 | 1.10 |
| 29 | .41 | 1.06 | 1.02 | 1.06 | ..... | 1.40 | 1.10 | 1.05 | 1.24 | 1.20 | 1.17 | 1.10 |
| 30 | .38 | 1.08 | ..... | 1.06 | ..... | 1.40 | 1.10 | 1.05 | 1.20 | 1.10 | 1.25 | 1.10 |
| 31 | .38 | ..... | 1.00 | 1.06 | ..... | 1.40 | ..... | 1.08 | ..... | 1.10 | 1.15 | ..... |

NOTE.—Gage heights Oct. 1 to Nov. 8, 1912, represent head over 6.0 foot weir, Francis type, without end contractions and no velocity of approach. Gage heights Nov. 9, 1912, to Sept. 30, 1913, refer to datum of staff gage installed Jan. 22, 1913, on wing of weir chamber.

*Daily discharge, in second-feet, of Boulder Creek at mouth, near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.1 | 4.1 | 5.3 | 2.0 | 2.6 | 12.5 | 9.5 | 3.0 | 2.8 | 5.0 | 3.0 | 2.5 |
| 2 | 3.1 | 3.1 | 3.4 | 2.9 | 2.6 | 13.5 | 11 | 3.0 | 2.7 | 4.8 | 3.0 | 2.2 |
| 3 | 3.4 | 3.6 | 2.6 | 3.2 | 2.5 | 8.6 | 11 | 3.0 | 2.7 | 4.8 | 3.0 | 2.1 |
| 4 | 8.6 | 4.3 | 2.6 | 3.2 | 2.5 | 11 | 10.5 | 2.9 | 2.7 | 5.0 | 4.4 | 2.7 |
| 5 | 7.5 | 4.0 | 3.0 | 2.9 | 2.5 | 14 | 8.6 | 2.9 | 2.6 | 5.0 | 4.4 | 2.0 |
| 6 | 7.9 | 4.0 | 2.6 | 2.9 | 2.9 | 11 | 8.0 | 2.9 | 2.6 | 4.8 | 3.0 | 2.0 |
| 7 | 3.4 | 4.0 | 2.6 | 2.9 | 2.9 | 16 | 8.0 | 2.9 | 2.5 | 4.8 | 3.0 | 4.2 |
| 8 | 2.2 | 3.3 | 2.5 | 2.8 | 3.8 | 14 | 7.4 | 2.9 | 2.7 | 6.8 | 3.2 | 4.4 |
| 9 | 1.8 | 2.8 | 2.5 | 2.8 | 4.0 | 16 | 6.2 | 2.9 | 2.8 | 6.2 | 3.4 | 4.4 |
| 10 | 1.7 | 3.2 | 2.4 | 2.9 | 3.2 | 11 | 6.5 | 2.7 | 3.2 | 6.2 | 3.2 | 2.5 |
| 11 | 1.5 | 4.0 | 2.5 | 3.2 | 2.8 | 10 | 5.0 | 2.7 | 3.2 | 6.5 | 3.4 | 1.8 |
| 12 | 1.9 | 4.2 | 2.5 | 2.8 | 2.9 | 14 | 5.0 | 2.4 | 3.4 | 5.6 | 3.2 | 4.2 |
| 13 | 4.1 | 4.0 | 2.5 | 2.6 | 2.9 | 14 | 5.0 | 1.8 | 4.8 | 6.2 | 3.2 | 4.6 |
| 14 | 6.4 | 3.0 | 2.5 | 2.3 | 2.9 | 14 | 5.0 | 2.0 | 4.8 | 8.0 | 3.2 | 4.6 |
| 15 | 4.7 | 3.2 | 2.4 | 2.3 | 2.9 | 12.5 | 6.5 | 1.7 | 5.6 | 7.4 | 3.2 | 4.6 |
| 16 | 5.1 | 2.9 | 2.6 | 12 | 2.3 | 11 | 5.3 | 1.6 | 6.2 | 7.4 | 3.2 | 3.4 |
| 17 | 5.1 | 2.8 | 2.4 | 11 | 2.3 | 8.6 | 5.0 | 1.6 | 6.5 | 7.1 | 3.4 | 3.0 |
| 18 | 5.2 | 2.7 | 2.4 | 9.5 | 2.2 | 8.0 | 4.6 | 1.6 | 6.5 | 8.0 | 3.4 | 2.9 |
| 19 | 6.4 | 2.8 | 2.6 | 5.6 | 2.2 | 8.0 | 5.0 | 1.6 | 7.1 | 8.0 | 4.6 | 3.0 |
| 20 | 5.2 | 2.8 | 2.4 | 4.4 | 2.4 | 8.6 | 4.8 | 1.8 | 6.5 | 8.0 | 5.3 | 3.8 |
| 21 | 5.1 | 2.8 | 2.4 | 4.0 | 2.9 | 11 | 4.6 | 1.7 | 6.5 | 5.0 | 3.8 | 3.0 |
| 22 | 5.2 | 2.6 | 2.5 | 3.0 | 26 | 9.5 | 4.0 | 1.8 | 6.5 | 4.4 | 3.8 | 3.0 |
| 23 | 5.1 | 2.3 | 2.2 | 3.0 | 25 | 18 | 4.2 | 2.5 | 9.5 | 4.0 | 3.6 | 3.2 |
| 24 | 4.7 | 2.7 | 2.4 | 2.5 | 8.6 | 17 | 4.0 | 2.5 | 8.0 | 4.0 | 3.6 | 4.0 |
| 25 | 5.1 | 2.7 | 2.5 | 2.5 | 4.0 | 14 | 3.0 | 2.0 | 8.0 | 2.5 | 3.6 | 3.8 |
| 26 | 5.2 | 2.8 | 2.4 | 2.5 | 26 | 15 | 3.0 | 2.0 | 8.0 | 3.0 | 4.0 | 3.5 |
| 27 | 5.1 | 2.6 | 2.3 | 2.6 | 20 | 13 | 3.4 | 2.0 | 8.9 | 3.0 | 4.0 | 3.3 |
| 28 | 5.2 | 2.6 | 2.1 | 2.7 | 18 | 11 | 3.0 | 2.3 | 5.6 | 5.0 | 3.6 | 3.0 |
| 29 | 5.2 | 2.6 | 2.2 | 2.6 | ..... | 11 | 3.0 | 2.5 | 6.2 | 5.0 | 4.4 | 3.0 |
| 30 | 4.7 | 2.8 | 2.1 | 2.6 | ..... | 11 | 3.0 | 2.5 | 5.0 | 3.0 | 6.5 | 3.0 |
| 31 | 4.7 | ..... | 2.0 | 2.6 | ..... | 11 | ..... | 2.8 | ..... | 3.0 | 4.0 | ..... |

NOTE.—Daily discharge Oct. 1 to Nov. 8, 1912, determined by weir formula $Q=3.33\ LH^{3/2}$. Discharge Nov. 9, 1912, to Sept. 30, 1912, determined from a well-defined rating curve.

*Monthly discharge of Boulder Creek at mouth, near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 8.6 | 1.5 | 4.63 | 285 | A. |
| November | 4.3 | 2.3 | 3.18 | 189 | B. |
| December | 5.3 | 2.0 | 2.56 | 157 | B. |
| January | 12 | 2.0 | 3.70 | 228 | B. |
| February | 26 | 2.2 | 6.64 | 369 | B. |
| March | 18 | 8.0 | 12.2 | 750 | B. |
| April | 11 | 3.0 | 5.77 | 343 | B. |
| May | 3.0 | 1.6 | 2.34 | 144 | B. |
| June | 9.5 | 2.5 | 5.14 | 306 | B. |
| July | 8.0 | 2.5 | 5.40 | 332 | B. |
| August | 6.5 | 3.0 | 3.70 | 228 | B. |
| September | 4.6 | 1.8 | 3.23 | 192 | B. |
| The year | 26 | 1.5 | 4.86 | 3,520 | |

## SAN DIEGO FLUME AT DIVERTING DAM, NEAR LAKESIDE, CAL.

LOCATION.—In the SE. ¼ sec. 11, T. 14 S., R. 2 E., at diverting dam about 13 miles northeast of Lakeside.

RECORDS AVAILABLE.—May 4, 1912, to September 30, 1913.

GAGE.—Vertical staff fastened to flume 500 feet below intake and a short distance above sand box. A Sanders & Rising water-stage recorder is installed at same site.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

ACCURACY.—A well-defined rating table has been developed for periods when there was little head on intake gate and these results are good. For periods when there was considerable head on the intake gate, a rating curve averaging the discharge measurements has been used. This curve has been used when the reservoir gage read 8.00 feet or more, and results are fair.

COOPERATION.—Station maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of San Diego Flume at diverting dam near Lakeside, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 2 | F. C. Ebert | 0.47 | 3.0 | Jan. 22 | E. W. Case | 0.82 | 9.7 |
| Nov. 9 | W. S. Post | .53 | 3.3 | Feb. 16 | F. C. Ebert | .58 | 4.4 |
| Dec. 16 | Taylor and Harriett | .53 | 3.3 | Mar. 15 | do | 1.30 | 23 |
| Jan. 13 | W. S. Post | .80 | 9.4 | May 13 | do | .56 | 5.1 |
| 22 | F. C. Ebert | .81 | 8.6 | | | | |

*Daily gage height, in feet, of San Diego Flume at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.48 | 0.51 | 0.41 | 0.43 | 0.52 | 1.65 | 1.41 | 0.70 | 0.63 | 0.79 | 0.59 | 0.53 |
| 2 | .48 | .55 | .42 | .30 | .50 | 1.78 | 1.53 | .65 | .65 | .77 | .57 | .47 |
| 3 | .44 | .56 | .56 | .44 | .50 | 1.70 | 1.61 | .50 | .61 | .77 | .55 | .46 |
| 4 | .90 | .52 | .56 | .46 | .50 | 1.62 | 1.39 | .50 | .62 | .72 | .53 | .45 |
| 5 | .90 | .60 | .52 | .47 | .50 | 1.73 | 1.32 | .50 | .59 | .68 | .52 | .34 |
| 6 | .93 | .57 | .49 | .31 | .50 | 1.65 | 1.15 | .50 | .59 | .68 | .51 | .46 |
| 7 | .74 | .55 | .52 | .26 | .50 | 1.61 | 1.12 | .50 | .58 | .70 | .51 | .54 |
| 8 | .62 | .55 | .51 | .30 | .87 | 1.46 | 1.13 | .50 | .58 | .77 | .51 | .56 |
| 9 | .54 | .56 | .50 | .16 | .83 | 1.28 | 1.31 | .58 | .59 | .79 | .51 | .53 |
| 10 | .38 | .55 | .49 | .45 | ..... | 1.33 | 1.19 | .59 | .58 | .80 | .52 | .39 |
| 11 | .38 | .55 | .50 | .67 | .66 | 1.25 | .96 | .58 | .58 | .80 | .52 | .40 |
| 12 | .50 | .52 | .51 | .80 | .66 | 1.70 | .95 | .58 | .68 | .78 | .51 | .54 |
| 13 | .49 | .52 | .51 | .70 | .66 | 1.86 | .94 | .56 | .69 | .81 | .51 | .54 |
| 14 | .58 | .52 | .51 | .60 | .64 | 1.89 | .94 | .56 | .69 | .81 | .51 | .55 |
| 15 | .49 | .53 | .52 | .53 | ..... | .81 | .94 | .56 | .70 | .80 | .51 | .51 |
| 16 | .57 | .54 | .53 | .65 | .60 | .79 | .94 | .46 | .70 | .80 | .51 | .47 |
| 17 | .53 | .55 | .53 | .79 | .58 | 1.22 | .96 | .44 | .73 | .78 | .50 | .48 |
| 18 | .52 | .48 | .52 | .79 | .58 | 1.33 | .97 | .45 | .62 | .79 | .52 | .48 |
| 19 | .49 | .48 | .52 | .79 | .58 | 1.40 | .98 | .45 | .60 | .76 | .54 | .51 |
| 20 | .48 | .52 | .51 | .77 | .58 | 1.45 | .99 | .45 | .64 | .68 | .56 | .50 |
| 21 | .48 | .54 | .51 | .75 | .58 | 1.51 | .99 | .45 | .73 | .66 | .56 | .50 |
| 22 | .45 | .56 | .49 | .80 | .97 | .97 | .98 | .47 | .73 | .65 | .55 | .48 |
| 23 | .50 | .56 | .49 | .79 | 1.52 | 1.81 | .32 | .48 | .76 | .62 | .53 | .51 |
| 24 | .52 | .51 | .23 | .74 | 1.65 | 1.96 | .81 | .48 | .80 | .60 | .52 | .48 |
| 25 | .52 | .53 | .38 | .73 | 1.65 | 1.93 | .78 | .54 | .80 | .55 | .52 | .52 |
| 26 | .51 | .52 | .50 | .63 | 1.65 | 1.93 | .70 | .59 | .80 | .52 | .53 | .46 |
| 27 | .53 | .52 | .48 | .58 | 1.65 | 1.64 | .70 | .58 | .81 | .52 | .53 | .50 |
| 28 | .52 | .47 | .45 | .55 | 1.65 | 1.44 | .69 | .57 | .84 | .56 | .53 | .48 |
| 29 | .50 | .45 | .48 | .55 | ..... | 1.41 | .66 | .56 | .80 | .60 | .54 | .50 |
| 30 | .52 | .45 | .51 | .56 | ..... | 1.30 | .68 | .55 | .75 | .60 | .58 | .47 |
| 31 | .51 | ..... | .45 | .55 | ..... | 1.25 | ..... | .56 | ..... | .60 | .57 | ..... |

NOTE.—Discharge relation somewhat affected by the head on the gates of the dam.

*Daily discharge, in second-feet, of San Diego flume at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.0 | 3.3 | 2.3 | 2.5 | 4.3 | 37 | 28 | 6.1 | 6.0 | 7.8 | 4.4 | 3.6 |
| 2 | 3.0 | 3.8 | 2.4 | 1.4 | 4.0 | 43 | 32 | 5.3 | 5.3 | 7.4 | 4.1 | 2.9 |
| 3 | 2.6 | 4.0 | 4.0 | 2.6 | 4.0 | 40 | 36 | 3.2 | 4.7 | 7.4 | 3.8 | 2.8 |
| 4 | 10 | 3.5 | 4.0 | 2.8 | 4.0 | 36 | 27 | 3.2 | 4.8 | 6.5 | 3.6 | 2.7 |
| 5 | 10 | 4.5 | 3.5 | 2.9 | 4.0 | 41 | 24 | 3.2 | 4.4 | 5.8 | 3.5 | 1.7 |
| 6 | 11 | 4.1 | 3.1 | 1.5 | 4.0 | 37 | 17 | 3.2 | 4.4 | 5.8 | 3.3 | 2.8 |
| 7 | 6.9 | 3.8 | 3.5 | 1.1 | 4.0 | 35 | 17 | 4.0 | 4.2 | 6.1 | 3.3 | 3.7 |
| 8 | 4.8 | 3.8 | 3.3 | 1.4 | 10 | 29 | 18 | 4.0 | 4.2 | 7.4 | 3.3 | 4.0 |
| 9 | 3.7 | 4.0 | 3.2 | 0.5 | 8.7 | 23 | 24 | 5.2 | 4.4 | 7.8 | 3.3 | 3.6 |
| 10 | 2.0 | 3.8 | 3.1 | 2.7 | 7.1 | 24 | 18 | 5.4 | 4.2 | 8.0 | 3.5 | 2.1 |
| 11 | 2.0 | 3.8 | 3.2 | 5.6 | 5.5 | 22 | 12 | 5.2 | 4.2 | 8.0 | 3.5 | 2.2 |
| 12 | 3.2 | 3.5 | 3.3 | 8.0 | 5.5 | 40 | 11 | 5.2 | 5.8 | 7.6 | 3.3 | 3.7 |
| 13 | 3.1 | 3.5 | 3.3 | 7.2 | 5.5 | 46 | 11 | 4.9 | 5.9 | 8.2 | 3.3 | 3.7 |
| 14 | 4.2 | 3.5 | 3.3 | 5.5 | 5.1 | 48 | 11 | 4.9 | 5.9 | 8.2 | 3.3 | 3.8 |
| 15 | 3.1 | 3.6 | 3.5 | 4.4 | 4.8 | 8.2 | 12 | 4.0 | 6.1 | 8.0 | 3.3 | 3.3 |
| 16 | 4.1 | 3.7 | 3.6 | 6.4 | 4.5 | 8.8 | 12 | 2.8 | 6.1 | 8.0 | 3.3 | 2.9 |
| 17 | 3.6 | 3.8 | 3.6 | 8.8 | 4.2 | 21 | 13 | 2.6 | 6.7 | 7.6 | 3.2 | 3.0 |
| 18 | 3.5 | 3.0 | 3.5 | 8.8 | 4.2 | 24 | 13 | 2.7 | 4.8 | 7.8 | 3.5 | 3.0 |
| 19 | 3.1 | 3.0 | 3.5 | 8.8 | 4.2 | 27 | 13 | 2.7 | 4.5 | 7.2 | 3.7 | 3.3 |
| 20 | 3.0 | 3.5 | 3.3 | 8.5 | 4.2 | 29 | 14 | 2.7 | 5.1 | 5.8 | 4.0 | 3.2 |
| 21 | 3.0 | 3.7 | 3.3 | 8.1 | 4.2 | 32 | 14 | 2.7 | 6.7 | 5.5 | 4.0 | 3.2 |
| 22 | 2.7 | 4.0 | 3.1 | 9.0 | 13 | 13 | 13 | 2.9 | 6.7 | 5.3 | 3.8 | 3.0 |
| 23 | 3.2 | 4.0 | 3.1 | 8.8 | 32 | 44 | 1.6 | 3.0 | 7.2 | 4.8 | 3.6 | 3.3 |
| 24 | 3.5 | 3.3 | 0.9 | 7.9 | 37 | 51 | 8.2 | 3.0 | 8.0 | 4.5 | 3.5 | 3.0 |
| 25 | 3.5 | 3.6 | 2.0 | 6.7 | 37 | 50 | 7.6 | 3.7 | 8.0 | 3.8 | 3.5 | 3.5 |
| 26 | 3.2 | 3.5 | 3.2 | 5.0 | 37 | 50 | 6.1 | 4.4 | 8.0 | 3.5 | 3.6 | 2.8 |
| 27 | 3.6 | 3.5 | 3.0 | 4.2 | 37 | 37 | 6.1 | 4.2 | 8.2 | 3.5 | 3.6 | 3.2 |
| 28 | 3.5 | 2.9 | 2.7 | 3.8 | 37 | 29 | 5.9 | 4.1 | 8.9 | 4.0 | 3.6 | 3.0 |
| 29 | 3.2 | 2.7 | 3.0 | 3.8 | ..... | 28 | 5.5 | 4.0 | 8.0 | 4.5 | 3.7 | 3.2 |
| 30 | 3.5 | 2.7 | 3.3 | 4.0 | ..... | 24 | 5.8 | 4.8 | 7.1 | 4.5 | 4.2 | 2.9 |
| 31 | 3.3 | ..... | 2.7 | 3.8 | ..... | 22 | ..... | 4.9 | ..... | 4.5 | 4.1 | ..... |

NOTE.—Discharge determined from two fairly well defined rating curves—one applicable when the reservoir gage reads 8 feet or more and the other when the reservoir gage reads less than 8 feet. See San Diego River at diverting dam, page 28.

*Monthly discharge of San Diego flume at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 11 | 2.0 | 4.07 | 250 | B. |
| November | 4.5 | 2.7 | 3.58 | 213 | B. |
| December | 4.0 | .9 | 3.12 | 192 | B. |
| January | 9.0 | .5 | 5.05 | 311 | C. |
| February | 37 | 4.0 | 12.0 | 666 | C. |
| March | 51 | 8.2 | 32.2 | 1,980 | C. |
| April | 36 | 5.5 | 14.6 | 869 | C. |
| May | 6.1 | 2.6 | 3.94 | 242 | B. |
| June | 8.9 | 4.2 | 5.95 | 354 | B. |
| July | 8.2 | 3.5 | 6.28 | 386 | B. |
| August | 4.4 | 3.2 | 3.60 | 221 | B. |
| September | 4.0 | 1.7 | 3.10 | 184 | B. |
| The year | 51 | .5 | 8.11 | 5,870 | |

*Combined daily discharge, in second-feet, of San Diego River and flume at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.0 | 3.3 | 2.3 | 2.5 | 4.3 | 39 | 28 | 6.1 | 6.0 | 7.8 | 4.4 | 3.6 |
| 2 | 3.0 | 3.8 | 2.4 | 1.4 | 4.0 | 43 | 34 | 5.3 | 5.3 | 7.4 | 4.1 | 2.9 |
| 3 | 2.6 | 4.0 | 4.0 | 2.6 | 4.0 | 40 | 37 | 3.2 | 4.7 | 7.4 | 3.8 | 2.8 |
| 4 | 10 | 3.5 | 4.0 | 2.8 | 4.0 | 36 | 27 | 3.2 | 4.8 | 6.5 | 3.6 | 2.7 |
| 5 | 10 | 4.5 | 3.5 | 2.9 | 4.0 | 41 | 24 | 3.2 | 4.4 | 5.8 | 3.5 | 1.7 |
| 6 | 11 | 4.1 | 3.1 | 1.5 | 4.0 | 37 | 17 | 3.2 | 4.4 | 5.8 | 3.3 | 2.8 |
| 7 | 6.9 | 3.8 | 3.5 | 1.1 | 6.0 | 35 | 17 | 4.0 | 4.2 | 6.1 | 3.3 | 3.7 |
| 8 | 4.8 | 3.8 | 3.3 | 1.4 | 10 | 29 | 18 | 4.0 | 4.2 | 7.4 | 3.3 | 4.0 |
| 9 | 3.7 | 4.0 | 3.2 | .5 | 8.7 | 23 | 24 | 5.2 | 4.4 | 7.8 | 3.3 | 3.6 |
| 10 | 2.0 | 3.8 | 3.1 | 2.7 | 7.1 | 24 | 18 | 5.4 | 4.2 | 8.0 | 3.5 | 2.1 |
| 11 | 2.0 | 3.8 | 3.2 | 5.6 | 5.5 | 22 | 12 | 5.2 | 4.2 | 8.0 | 3.5 | 2.2 |
| 12 | 3.2 | 3.5 | 3.3 | 8.0 | 5.5 | 40 | 11 | 5.2 | 5.8 | 7.6 | 3.3 | 3.7 |
| 13 | 3.1 | 3.5 | 3.3 | 7.2 | 5.5 | 50 | 11 | 4.9 | 5.9 | 8.2 | 3.3 | 3.7 |
| 14 | 4.2 | 3.5 | 3.3 | 5.5 | 5.1 | 49 | 11 | 4.9 | 5.9 | 8.2 | 3.3 | 3.8 |
| 15 | 3.1 | 3.6 | 3.5 | 4.4 | 4.8 | 8.2 | 12 | 4.0 | 6.1 | 8.0 | 3.3 | 3.3 |
| 16 | 4.1 | 3.7 | 3.6 | 33 | 4.5 | 12 | 12 | 2.8 | 6.1 | 8.0 | 3.3 | 2.9 |
| 17 | 3.6 | 3.8 | 3.6 | 37 | 4.2 | 21 | 13 | 2.6 | 6.7 | 7.6 | 3.2 | 3.0 |
| 18 | 3.5 | 3.0 | 3.5 | 19 | 4.2 | 24 | 13 | 2.7 | 4.8 | 7.8 | 3.5 | 3.0 |
| 19 | 3.1 | 3.0 | 3.5 | 14 | 4.2 | 27 | 13 | 2.7 | 4.5 | 7.2 | 3.7 | 3.3 |
| 20 | 3.0 | 3.5 | 3.3 | 10 | 4.2 | 30 | 14 | 2.7 | 5.1 | 5.8 | 4.0 | 3.2 |
| 21 | 3.0 | 3.7 | 3.3 | 8.6 | 6.2 | 32 | 14 | 2.7 | 6.7 | 5.5 | 4.0 | 3.2 |
| 22 | 2.7 | 4.0 | 3.1 | 9.0 | 83 | 19 | 13 | 2.9 | 6.7 | 5.3 | 3.8 | 3.0 |
| 23 | 3.2 | 4.0 | 3.1 | 8.8 | 42 | 54 | 4.0 | 3.0 | 7.2 | 4.8 | 3.6 | 3.3 |
| 24 | 3.5 | 3.3 | .9 | 7.9 | 39 | 52 | 8.2 | 3.0 | 8.0 | 4.5 | 3.5 | 3.0 |
| 25 | 3.5 | 3.6 | 2.0 | 6.7 | 92 | 55 | 7.6 | 3.7 | 8.0 | 3.8 | 3.5 | 3.5 |
| 26 | 3.2 | 3.5 | 3.2 | 5.0 | 77 | 55 | 6.1 | 4.4 | 8.0 | 3.5 | 3.6 | 2.8 |
| 27 | 3.6 | 3.5 | 3.0 | 4.2 | 92 | 37 | 6.1 | 4.2 | 8.2 | 3.5 | 3.6 | 3.2 |
| 28 | 3.5 | 2.9 | 2.7 | 3.8 | 65 | 29 | 6.0 | 4.1 | 8.9 | 4.0 | 3.6 | 3.0 |
| 29 | 3.2 | 2.7 | 3.0 | 3.8 | ..... | 28 | 5.5 | 4.0 | 8.0 | 4.5 | 3.7 | 3.2 |
| 30 | 3.5 | 2.7 | 3.3 | 4.0 | ..... | 24 | 5.8 | 4.8 | 7.1 | 4.5 | 4.2 | 2.9 |
| 31 | 3.3 | ..... | 2.7 | 3.8 | ..... | 22 | ..... | 4.9 | ..... | 4.5 | 4.1 | ..... |

*Combined monthly discharge of San Diego River and flume at diverting dam near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 11 | 2.0 | 4.07 | 250 | B. |
| November | 4.5 | 2.7 | 3.58 | 213 | B. |
| December | 4.0 | .9 | 3.12 | 192 | B. |
| January | 37 | .5 | 7.38 | 454 | B. |
| February | 92 | 4.0 | 21.4 | 1,190 | B. |
| March | 55 | 8.2 | 33.5 | 2,060 | B. |
| April | 37 | 4.0 | 14.7 | 875 | C. |
| May | 6.1 | 2.6 | 3.94 | 242 | B. |
| June | 8.9 | 4.2 | 5.95 | 354 | B. |
| July | 8.2 | 3.5 | 6.28 | 386 | B. |
| August | 4.4 | 3.2 | 3.60 | 221 | B. |
| September | 4.0 | 1.7 | 3.10 | 184 | B. |
| The year | 92 | .5 | 9.15 | 6,620 | |

## SAN DIEGO FLUME NEAR LAKESIDE, CAL.[1]

LOCATION.—One-fourth mile above trestle crossing at Los Coches Creek, about 3 miles southeast of Lakeside.

RECORDS AVAILABLE.—January 1, 1907, to September 30, 1913.

GAGE.—Depth of water in flume is measured at reference point at patrolman's cabin. On November 12, 1912, a Sanders & Rising water-stage recorder was installed at same section.

[1] See Boulder Creek at Cuyamaca reservoir, diversion and storage, p. 34.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

STORAGE AND DIVERSIONS.—The Cuyamaca reservoir, on the headwaters of Boulder Creek, has a capacity of 11,400 acre-feet. From the reservoir the water flows down the natural channel of Boulder Creek and San Diego River to the intake of the San Diego flume, a distance of 12½ miles. Water is diverted into flume from South Fork of San Diego River.

ACCURACY.—Rating curve fairly well defined. On account of leakage and diversion for irrigation on the Capitan Grande Indian Reservation, the record does not show the total diversion. Results good.

COOPERATION.—Station maintained in cooperation with the Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of San Diego flume near Lakeside, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 4 | F. C. Ebert | 0.30 | 2.6 | Apr. 15 | H. D. McGlashan | 0.76 | 12 |
| Jan. 23 | do | .58 | 8.2 | May 14 | F. C. Ebert | .43 | 4.7 |
| Feb. 17 | do | .38 | 3.6 | June 20 | do | .39 | 3.0 |
| Mar. 16 | do | .27 | 1.7 | Aug. 24 | do | .31 | 2.2 |

*Daily gage height, in feet, of San Diego flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.24 | 0.32 | 0.29 | 0.33 | 0.33 | 0.60 | 0.61 | 0.57 | 0.36 | 0.49 | 0.37 | 0.33 |
| 2 | .29 | .31 | .25 | .30 | .31 | .59 | .61 | .55 | .44 | .47 | .36 | .28 |
| 3 | .29 | .32 | .25 | .28 | .30 | .54 | .68 | .40 | .37 | .47 | .33 | .24 |
| 4 | .30 | .28 | .30 | .28 | .29 | .52 | .67 | .38 | .42 | .41 | .31 | .31 |
| 5 | .62 | .29 | .33 | .26 | .45 | .56 | .67 | .42 | .40 | .49 | .32 | .23 |
| 6 | .69 | .35 | .31 | ------- | .32 | .63 | .81 | .40 | .37 | .37 | .33 | .16 |
| 7 | .71 | .36 | .33 | ------- | .38 | .64 | .64 | .40 | .35 | .38 | .29 | .29 |
| 8 | .62 | .31 | .30 | .05 | .40 | .66 | .64 | .38 | .34 | .42 | .27 | .33 |
| 9 | .48 | .33 | .28 | .06 | .41 | .64 | .64 | .37 | .33 | .47 | .31 | .34 |
| 10 | .35 | .34 | .27 | .07 | .43 | .63 | .63 | .40 | .40 | .47 | .29 | .27 |
| 11 | .22 | .34 | .27 | .08 | .49 | .66 | .61 | .41 | .38 | .46 | .30 | .18 |
| 12 | .07 | .35 | .28 | .54 | .48 | .63 | .88 | .42 | .41 | .49 | .31 | .29 |
| 13 | .28 | .32 | .30 | .53 | .48 | .60 | .64 | .42 | .45 | .50 | .29 | .31 |
| 14 | .28 | .32 | .29 | .50 | .50 | .67 | .72 | .43 | .45 | .49 | .29 | .30 |
| 15 | .41 | .31 | .30 | .41 | .48 | .66 | .74 | .42 | .48 | .49 | .28 | .31 |
| 16 | .31 | .31 | .29 | .44 | .44 | .31 | .73 | .40 | .50 | .50 | .30 | .29 |
| 17 | .41 | .34 | .30 | .56 | .37 | ------- | .77 | .32 | .50 | .53 | .30 | .27 |
| 18 | .38 | .31 | .31 | .57 | .37 | ------- | .80 | .32 | .48 | .52 | .30 | .24 |
| 19 | .36 | .29 | .30 | .57 | .37 | ------- | .79 | .28 | .38 | .51 | .33 | .28 |
| 20 | .41 | .29 | .31 | .54 | .36 | ------- | .80 | .28 | .37 | .52 | .34 | .28 |
| 21 | .40 | .29 | .29 | .55 | .37 | .73 | .79 | .28 | .40 | .46 | .37 | .28 |
| 22 | .41 | .28 | .30 | .47 | .42 | .62 | .78 | .27 | .47 | .42 | .35 | .25 |
| 23 | .40 | .28 | .34 | .55 | .58 | ------- | .67 | .28 | .55 | .40 | .32 | .29 |
| 24 | .38 | .28 | .33 | .52 | .55 | .73 | .57 | .28 | .52 | .37 | .31 | .27 |
| 25 | .40 | .33 | .35 | .51 | .62 | .65 | .69 | .29 | .51 | .36 | .31 | .28 |
| 26 | .41 | .32 | .17 | .43 | .58 | .68 | .58 | .33 | .52 | .32 | .29 | .25 |
| 27 | .30 | .29 | .33 | .40 | .62 | .69 | .58 | .32 | .50 | .32 | .31 | .25 |
| 28 | .31 | .28 | .31 | .36 | .60 | .70 | .52 | .33 | .56 | .33 | .35 | .24 |
| 29 | .30 | .28 | .30 | .40 | ------- | .72 | .46 | .35 | .53 | .40 | .33 | .24 |
| 30 | .29 | .29 | .30 | .34 | ------- | .71 | .54 | .33 | .49 | .38 | .36 | .23 |
| 31 | .31 | ------- | .34 | .33 | ------- | .72 | ------- | .32 | ------- | .39 | .38 | ------- |

NOTE.—Water in flume frozen Jan. 6, 7, and 8, 1913; Jan. 9, ice effect not great.

*Daily discharge, in second-feet, of San Diego flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | 2.6 | 2.1 | 2.8 | 2.8 | 8.2 | 8.4 | 7.5 | 3.3 | 5.8 | 3.5 | 2.8 |
| 2 | 2.1 | 2.5 | 1.6 | 2.3 | 2.5 | 8.0 | 8.4 | 7.1 | 4.8 | 5.4 | 3.3 | 2.0 |
| 3 | 2.1 | 2.6 | 1.6 | 2.0 | 2.3 | 6.9 | 10 | 4.0 | 3.5 | 5.4 | 2.8 | 1.4 |
| 4 | 2.3 | 2.0 | 2.3 | 2.0 | 2.1 | 6.4 | 9.9 | 3.6 | 4.4 | 4.2 | 2.5 | 2.5 |
| 5 | 8.7 | 2.1 | 2.8 | 1.7 | 5.0 | 7.3 | 9.9 | 4.4 | 4.0 | 5.8 | 2.6 | 1.3 |
| 6 | 10 | 3.1 | 2.5 | .0 | 2.6 | 8.9 | 14 | 4.0 | 3.5 | 3.5 | 2.8 | .7 |
| 7 | 11 | 3.3 | 2.8 | .0 | 3.6 | 9.1 | 9.1 | 4.0 | 3.1 | 3.6 | 2.1 | 2.1 |
| 8 | 8.7 | 2.5 | 2.3 | .1 | 4.0 | 9.6 | 9.1 | 3.6 | 3.0 | 4.4 | 1.8 | 2.8 |
| 9 | 5.6 | 2.8 | 2.0 | .2 | 4.2 | 9.1 | 9.1 | 3.5 | 2.8 | 5.4 | 2.5 | 3.0 |
| 10 | 3.1 | 3.0 | 1.8 | .2 | 4.6 | 8.9 | 8.9 | 4.0 | 4.0 | 5.4 | 2.1 | 1.8 |
| 11 | 1.2 | 3.0 | 1.8 | .2 | 5.8 | 9.6 | 8.4 | 4.2 | 3.6 | 5.2 | 2.3 | .8 |
| 12 | .2 | 3.1 | 2.0 | 6.9 | 5.6 | 8.9 | 16 | 4.4 | 4.2 | 5.8 | 2.5 | 2.1 |
| 13 | 2.0 | 2.6 | 2.3 | 6.6 | 5.6 | 8.2 | 9.1 | 4.4 | 5.0 | 6.0 | 2.1 | 2.5 |
| 14 | 2.0 | 2.6 | 2.1 | 6.0 | 6.0 | 9.9 | 11 | 4.6 | 5.0 | 5.8 | 2.1 | 2.3 |
| 15 | 4.2 | 2.5 | 2.3 | 4.2 | 5.6 | 9.6 | 12 | 4.4 | 5.6 | 5.8 | 2.0 | 2.5 |
| 16 | 2.5 | 2.5 | 2.1 | 4.8 | 4.8 | 2.5 | 11 | 4.0 | 6.0 | 6.0 | 2.3 | 2.1 |
| 17 | 4.2 | 3.0 | 2.3 | 7.3 | 3.5 | 10 | 12 | 2.6 | 6.0 | 6.6 | 2.3 | 1.8 |
| 18 | 3.6 | 2.5 | 2.5 | 7.5 | 3.5 | 12 | 13 | 2.6 | 5.6 | 6.4 | 2.3 | 1.4 |
| 19 | 3.3 | 2.1 | 2.3 | 7.5 | 3.5 | 13 | 13 | 2.0 | 3.6 | 6.2 | 2.8 | 2.0 |
| 20 | 4.2 | 2.1 | 2.5 | 6.9 | 3.3 | 14 | 13 | 2.0 | 3.5 | 6.4 | 3.0 | 2.0 |
| 21 | 4.0 | 2.1 | 2.1 | 7.1 | 3.5 | 11 | 13 | 2.0 | 4.0 | 5.2 | 3.5 | 2.0 |
| 22 | 4.2 | 2.0 | 2.3 | 5.4 | 4.4 | 8.7 | 13 | 1.8 | 5.4 | 4.4 | 3.1 | 1.6 |
| 23 | 4.0 | 2.0 | 3.0 | 7.1 | 7.7 | 10 | 9.9 | 2.0 | 7.1 | 4.0 | 2.6 | 2.1 |
| 24 | 3.6 | 2.0 | 2.8 | 6.4 | 7.1 | 11 | 7.5 | 2.0 | 6.4 | 3.5 | 2.5 | 1.8 |
| 25 | 4.0 | 2.8 | 3.1 | 6.2 | 8.7 | 9.4 | 10 | 2.1 | 6.2 | 3.3 | 2.5 | 2.0 |
| 26 | 4.2 | 2.6 | .7 | 4.6 | 7.7 | 10 | 7.7 | 2.8 | 6.4 | 2.6 | 2.1 | 1.6 |
| 27 | 2.3 | 2.1 | 2.8 | 4.0 | 8.7 | 10 | 7.7 | 2.6 | 6.0 | 2.6 | 2.5 | 1.6 |
| 28 | 2.5 | 2.0 | 2.5 | 3.3 | 8.2 | 11 | 6.4 | 2.8 | 7.3 | 2.8 | 3.1 | 1.4 |
| 29 | 2.3 | 2.0 | 2.3 | 4.0 | ..... | 11 | 5.2 | 3.1 | 6.6 | 4.0 | 2.8 | 1.4 |
| 30 | 2.1 | 2.1 | 2.3 | 3.0 | ..... | 11 | 6.9 | 2.8 | 5.8 | 3.6 | 3.3 | 1.3 |
| 31 | 2.5 | ..... | 3.0 | 2.8 | ..... | 11 | ..... | 2.6 | ..... | 3.8 | 3.6 | ..... |

NOTE.—Daily discharge determined from a fairly well defined rating curve, same as that used for 1909. Discharge estimated Jan. 6 to 8 and Mar. 17 to 20 and 23.

*Monthly discharge of San Diego flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 11 | 0.2 | 3.81 | 234 | B. |
| November | 3.3 | 2 | 2.47 | 147 | B. |
| December | 3.1 | .7 | 2.29 | 141 | B. |
| January | 7.5 | 0 | 3.97 | 244 | B. |
| February | 8.7 | 2.1 | 4.89 | 272 | B. |
| March | 14 | 2.5 | 9.49 | 584 | A. |
| April | 16 | 5.2 | 10.1 | 601 | A. |
| May | 7.5 | 1.8 | 3.47 | 213 | B. |
| June | 7.3 | 2.8 | 4.86 | 289 | B. |
| July | 6.6 | 2.6 | 4.80 | 295 | B. |
| August | 3.6 | 1.8 | 2.62 | 161 | B. |
| September | 3 | .7 | 1.89 | 112 | B. |
| The year | 16 | 0 | 4.55 | 3,290 | |

*Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | 2.6 | 2.1 | 2.8 | 2.8 | 38 | 20 | 7.7 | 3.3 | 5.8 | 3.5 | 2.8 |
| 2 | 2.1 | 2.5 | 1.6 | 2.3 | 2.5 | 38 | 24 | 7.3 | 4.8 | 5.4 | 3.3 | 2.0 |
| 3 | 2.1 | 2.6 | 1.6 | 2.0 | 2.3 | 32 | 26 | 4.2 | 3.5 | 5.4 | 2.8 | 1.4 |
| 4 | 2.3 | 2.0 | 2.3 | 2.0 | 2.1 | 21 | 21 | 3.8 | 4.4 | 4.2 | 2.5 | 2.5 |
| 5 | 8.7 | 2.1 | 2.8 | 1.7 | 5.0 | 22 | 21 | 4.6 | 4.0 | 5.8 | 2.6 | 1.3 |
| 6 | 10 | 3.1 | 2.5 | .0 | 2.6 | 34 | 25 | 4.2 | 3.5 | 3.5 | 2.8 | .7 |
| 7 | 11 | 3.3 | 2.8 | .0 | 3.6 | 29 | 20 | 4.2 | 3.1 | 3.6 | 2.1 | 2.1 |
| 8 | 8.7 | 2.5 | 2.3 | .1 | 4.0 | 25 | 16 | 4.1 | 3.0 | 4.4 | 1.8 | 2.8 |
| 9 | 5.6 | 2.8 | 2.0 | .2 | 4.2 | 24 | 16 | 3.7 | 2.8 | 5.4 | 2.5 | 3.0 |
| 10 | 3.1 | 3.0 | 1.8 | .2 | 4.6 | 19 | 19 | 4.2 | 4.0 | 5.4 | 2.1 | 1.8 |
| 11 | 1.2 | 3.0 | 1.8 | .2 | 5.8 | 20 | 15 | 4.4 | 3.6 | 5.2 | 2.3 | .8 |
| 12 | .2 | 3.1 | 2.0 | 6.9 | 5.6 | 24 | 23 | 4.6 | 4.2 | 5.8 | 2.5 | 2.1 |
| 13 | 2.0 | 2.6 | 2.3 | 6.6 | 5.6 | 33 | 11 | 4.6 | 5.0 | 6.0 | 2.1 | 2.5 |
| 14 | 2.0 | 2.6 | 2.1 | 6.0 | 6.0 | 45 | 13 | 4.8 | 5.0 | 5.8 | 2.1 | 2.3 |
| 15 | 4.2 | 2.5 | 2.3 | 4.2 | 5.9 | 45 | 14 | 4.6 | 5.6 | 5.8 | 2.0 | 2.5 |
| 16 | 2.5 | 2.5 | 2.1 | 4.8 | 4.8 | 14 | 12 | 4.2 | 6.0 | 6.0 | 2.3 | 2.1 |
| 17 | 4.2 | 3.0 | 2.3 | 7.3 | 3.5 | 25 | 13 | 2.8 | 6.0 | 6.6 | 2.3 | 1.8 |
| 18 | 3.6 | 2.5 | 2.5 | 7.5 | 3.5 | 21 | 14 | 2.8 | 5.6 | 6.4 | 2.3 | 1.4 |
| 19 | 3.3 | 2.1 | 2.3 | 7.5 | 3.5 | 16 | 14 | 2.2 | 3.6 | 6.2 | 2.8 | 2.0 |
| 20 | 4.2 | 2.1 | 2.5 | 6.9 | 3.3 | 22 | 14 | 2.2 | 3.5 | 6.4 | 3.0 | 2.0 |
| 21 | 4.0 | 2.1 | 2.1 | 7.1 | 3.5 | 28 | 14 | 2.2 | 4.0 | 5.2 | 3.5 | 2.0 |
| 22 | 4.2 | 2.0 | 2.3 | 5.4 | 4.4 | 34 | 14 | 1.9 | 5.4 | 4.4 | 3.1 | 1.6 |
| 23 | 4.0 | 2.0 | 3.0 | 7.1 | 7.7 | 20 | 10 | 2.0 | 7.1 | 4.0 | 2.6 | 2.1 |
| 24 | 3.6 | 2.0 | 2.8 | 6.4 | 7.1 | 35 | 8.0 | 2.0 | 6.4 | 3.5 | 2.5 | 1.8 |
| 25 | 4.0 | 2.8 | 3.1 | 6.2 | 9.7 | 45 | 10 | 2.1 | 6.2 | 3.3 | 2.5 | 2.0 |
| 26 | 4.2 | 2.6 | .7 | 4.6 | 48 | 52 | 8.2 | 2.8 | 6.4 | 2.6 | 2.1 | 1.6 |
| 27 | 2.3 | 2.1 | 2.8 | 4.0 | 34 | 33 | 8.2 | 2.6 | 6.0 | 2.6 | 2.5 | 1.6 |
| 28 | 2.5 | 2.0 | 2.5 | 3.3 | 48 | 34 | 6.7 | 2.8 | 7.3 | 2.8 | 3.1 | 1.4 |
| 29 | 2.3 | 2.0 | 2.3 | 4.0 | ..... | 24 | 5.5 | 3.1 | 6.6 | 4.0 | 2.8 | 1.4 |
| 30 | 2.1 | 2.1 | 2.3 | 3.0 | ..... | 24 | 7.2 | 2.8 | 5.8 | 3.6 | 3.3 | 1.3 |
| 31 | 2.5 | ..... | 3.0 | 2.8 | ..... | 19 | ..... | 2.6 | ..... | 3.8 | 3.6 | ..... |

*Combined monthly discharge of San Diego River and flume near Lakeside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 11 | 0.2 | 3.81 | 234 | B. |
| November | 3.3 | 2.0 | 2.47 | 147 | B. |
| December | 3.1 | .7 | 2.29 | 141 | B. |
| January | 7.5 | .0 | 3.97 | 244 | B. |
| February | 48 | 2.1 | 8.70 | 483 | D. |
| March | 52 | 14 | 28.9 | 1,780 | C. |
| April | 26 | 5.5 | 14.8 | 881 | B. |
| May | 7.7 | 1.9 | 3.62 | 223 | B. |
| June | 7.3 | 2.8 | 4.86 | 289 | B. |
| July | 6.6 | 2.6 | 4.80 | 295 | B. |
| August | 3.6 | 1.8 | 2.62 | 161 | B. |
| September | 3.0 | .7 | 1.89 | 112 | B. |
| The year | 52 | .0 | 6.88 | 4,990 | |

## SOUTH FORK OF SAN DIEGO RIVER NEAR ALPINE, CAL.

LOCATION.—In the NE. ¼ sec. 10, T. 15 S., R. 2 E., in Capitan Grande Indian Reservation, about 100 feet below intake of South Fork flume, about half a mile above junction with San Diego River, and 4 miles north of Alpine.

RECORDS AVAILABLE.—October 1, 1912, to September 30, 1913.

DRAINAGE AREA.—44.5 square miles; measured on topographic map.

GAGE.—Sanders & Rising water-stage recorder on left bank. Vertical staff is fastened to outside of gage well.

CHANNEL.—Solid rock; rough.

DISCHARGE MEASUREMENTS.—Made from bridge 1,500 feet below gage or by wading.

DIVERSIONS.—South Fork flume, which heads above the station, diverts water into San Diego flume.

ACCURACY.—Stream dry at station nearly entire year. Rating curve defined by measurements in 1914. Results good.

COOPERATION.—Station maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

No discharge measurement made in the year ending Sept. 30, 1913.

*Daily gage height, in feet, and discharge, in second-feet, of South Fork of San Diego River near Alpine, Cal., for the year ending Sept. 30, 1913.*

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| Feb. 22 | 1.45 | 10 | Feb. 28 | 0.35 | 0.3 |
| 23 | .15 | .1 | Mar. 1 | .10 | .05 |
| 25 | .02 | .0 | Sept. 13 | ..... | [a] 30 |
| 26 | .30 | .2 | 14 | ..... | [a] 5.8 |
| 27 | .50 | .5 | | | |

[a] A cloudburst occurred Sept. 13, 1913. River began to flow at 1 p. m. and reached a maximum gage height of 3.5 feet and discharge of 105 second-feet at about 4 p. m. Flow continued until 6 a. m. Sept. 14.

NOTE.—Discharge determined from a curve, fairly well defined by measurements made in 1914. The river was dry for the year except periods Feb. 22 to 23, Feb. 25 to Mar. 1, and Sept. 13 to 14; all water was being diverted in to South Fork San Diego flume above river gage.

## SOUTH FORK OF SAN DIEGO FLUME NEAR ALPINE, CAL.

LOCATION.—In the NE. ¼ sec. 10, T. 15 S., R. 2 E., on Capitan Grande Indian Reservation, 100 feet below diversion dam, about half a mile above mouth of South Fork of San Diego River, and 4 miles north of Alpine.

RECORDS AVAILABLE.—January 10 to September 30, 1913.

GAGE.—Sanders & Rising water-stage recorder on left side of flume 100 feet below intake. A vertical staff is fastened to flume at same site.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

ACCURACY.—Rating curve well defined; results good.

COOPERATION.—Station maintained in cooperation with Cuyamaca Water Co., through W. S. Post, engineer.

*Discharge measurements of South Fork San Diego flume near Alpine, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 11 | W. S. Post | 0.16 | [a] 0.8 | Feb. 26 | E. W. Case | 0.85 | 12 |
| 16 | ....do | .22 | 1.0 | Mar. 15 | F. C. Ebert | .50 | 5.5 |
| Feb. 16 | F. C. Ebert | .17 | .4 | May 13 | ....do | .19 | .4 |

[a] Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of South Fork of San Diego flume near Alpine, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | | Feb. | | Mar. | | Apr. | | May. | | June. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 0.15 | 0.2 | 0.82 | 11.5 | 1.16 | 18 | 0.22 | 0.9 | ..... | 0.4 |
| 2 | ..... | ..... | .15 | .2 | .57 | 6.8 | 1.08 | 16.5 | .21 | .8 | ..... | .4 |
| 3 | ..... | ..... | .15 | .2 | .52 | 5.8 | .93 | 13.5 | .22 | .9 | 0.19 | .5 |
| 4 | ..... | ..... | .15 | .2 | .56 | 6.6 | .66 | 8.4 | .20 | .6 | ..... | .4 |
| 5 | ..... | ..... | .16 | .2 | .65 | 8.2 | .51 | 5.6 | .20 | .6 | ..... | .3 |
| 6 | ..... | ..... | .17 | .3 | .60 | 7.3 | .47 | 5.0 | .19 | .5 | ..... | .2 |
| 7 | ..... | ..... | .17 | .3 | .52 | 5.8 | .40 | 3.7 | .19 | .5 | .12 | .1 |
| 8 | ..... | ..... | .17 | .3 | .50 | 5.5 | .45 | 4.6 | .19 | .5 | ..... | .1 |
| 9 | ..... | ..... | .18 | .4 | .49 | 5.3 | .38 | 3.4 | .19 | .5 | ..... | .1 |
| 10 | 0.40 | 3.7 | .18 | .4 | .46 | 4.8 | .41 | 3.9 | .19 | .5 | ..... | .1 |
| 11 | .15 | .2 | .18 | .4 | .44 | 4.4 | .55 | 6.4 | .19 | .5 | .13 | .1 |
| 12 | ..... | .2 | .17 | .3 | .90 | 13 | .58 | 7.0 | .19 | .5 | ..... | .1 |
| 13 | .13 | .1 | .17 | .3 | .60 | 7.3 | .70 | 9.2 | .19 | .5 | ..... | .0 |
| 14 | .13 | .1 | .17 | .3 | .86 | 12 | .72 | 9.6 | .18 | .4 | .01 | .0 |
| 15 | ..... | .5 | .17 | .3 | .48 | 5.1 | .48 | 5.1 | .18 | .4 | ..... | ..... |
| 16 | .22 | .9 | .17 | .3 | .43 | 4.2 | .38 | 3.4 | .17 | .3 | ..... | ..... |
| 17 | .21 | .8 | .17 | .3 | .50 | 5.5 | .39 | 3.6 | .17 | .3 | ..... | ..... |
| 18 | .18 | .4 | .17 | .3 | .52 | 5.8 | .44 | 4.4 | ..... | .3 | ..... | ..... |
| 19 | .18 | .4 | .17 | .3 | .52 | 5.8 | .42 | 4.0 | ..... | .3 | ..... | ..... |
| 20 | .17 | .3 | .18 | .4 | .53 | 6.0 | .37 | 3.2 | ..... | .3 | ..... | ..... |
| 21 | .14 | .2 | .40 | 3.7 | .80 | 11 | .35 | 2.8 | ..... | .3 | ..... | ..... |
| 22 | .14 | .2 | 1.19 | 19 | .93 | 13.5 | .32 | 2.4 | ..... | .3 | ..... | ..... |
| 23 | .14 | .2 | .67 | 8.6 | .77 | 10.5 | .28 | 1.8 | ..... | .3 | ..... | ..... |
| 24 | .14 | .2 | .42 | 4.0 | .68 | 8.8 | .26 | 1.5 | .17 | .3 | ..... | ..... |
| 25 | .15 | .2 | .94 | 14 | .60 | 7.3 | .23 | 1.0 | ..... | .3 | ..... | ..... |
| 26 | .15 | .2 | .87 | 12.5 | 1.07 | 16.5 | .22 | .9 | ..... | .3 | ..... | ..... |
| 27 | .15 | .2 | .99 | 15 | 1.17 | 18.5 | .22 | .9 | ..... | .3 | ..... | ..... |
| 28 | .15 | .2 | .90 | 13 | 1.06 | 16 | .22 | .9 | ..... | .3 | ..... | ..... |
| 29 | .15 | .2 | ..... | ..... | .71 | 9.4 | .22 | .9 | ..... | .3 | ..... | ..... |
| 30 | .15 | .2 | ..... | ..... | .74 | 9.9 | .23 | 1.0 | ..... | .3 | ..... | ..... |
| 31 | .15 | .2 | ..... | ..... | 1.15 | 18 | ..... | ..... | .17 | .3 | ..... | ..... |

NOTE.—June 13 to Sept. 12, and Sept. 15 to 30, 1913, no water in flume; rise Sept. 13 due to cloudburst. Sept. 14, flume dry in afternoon. Discharge Sept. 13, 5.5 second-feet; Sept. 14, 0.2 second-foot.

Daily discharge determined from a fairly well defined curve. Discharge interpolated for days for which gage height is not recorded.

*Monthly discharge of South Fork of San Diego flume near Alpine, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| January 10–31 | 3.7 | 0.1 | 0.45 | 20 | |
| February | 19 | .2 | 3.42 | 190 | B. |
| March | 18.5 | 4.2 | 8.91 | 548 | B. |
| April | 18 | .9 | 5.09 | 303 | B. |
| May | .9 | .3 | .43 | 26 | |
| June | .5 | .0 | .09 | 5 | |
| July | .0 | .0 | .00 | 0 | |
| August | .0 | .0 | .00 | 0 | |
| September | 5.5 | .0 | .19 | 11 | |
| The period | ..... | ..... | ..... | 1,100 | |

## SAN DIEGUITO RIVER BASIN.

### SANTA YSABEL CREEK NEAR SANTA YSABEL, CAL.

LOCATION.—At bridge on Santa Ysabel-Warner Springs road, in Santa Ysabel grant, about 1½ miles north of Santa Ysabel.

RECORDS AVAILABLE.—August 29 to September 30, 1913.

DRAINAGE AREA.—12.8 square miles; measured on topographic map.

GAGE.—Vertical staff fastened to left abutment of bridge.

CHANNEL.—Bedrock and bowlders.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Results, fair.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Santa Ysabel Creek near Santa Ysabel, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 18 | W. J. Isbell | 1.20 | 1.5 | May 8 | W. J. Isbell | .89 | 4.1 |
| Dec. 10 | do | 1.28 | 2.0 | 10 | F. C. Ebert | .86 | 3.2 |
| 17 | F. C. Ebert | 1.26 | 1.5 | June 15 | do | .76 | 1.2 |
| Jan. 14 | W. J. Isbell | .78 | 2.1 | 23 | W. J. Isbell | .68 | 1.1 |
| 31 | do | .90 | 2.7 | July 23 | do | .65 | .8 |
| Feb. 18 | F. C. Ebert | .90 | 2.0 | Aug. 21 | do | .45 | .4 |
| Mar. 4 | W. J. Isbell | .98 | 10 | 29 | do | .53 | *a*.3 |
| Apr. 26 | do | .99 | 5.2 | | | | |

[a] Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of Santa Ysabel Creek near Santa Ysabel, Cal., for the year ending Sept. 30, 1913.*

| Day. | August. | | September. | | Day. | August. | | September. | |
|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | | 0.4 | 16 | | | | 0.2 |
| 2 | | | | .4 | 17 | | | 0.3 | .2 |
| 3 | | | | .4 | 18 | | | | .2 |
| 4 | | | 0.55 | .4 | 19 | | | | .2 |
| 5 | | | | .4 | 20 | | | | .2 |
| 6 | | | | .4 | 21 | | | | .2 |
| 7 | | | | .3 | 22 | | | .35 | .2 |
| 8 | | | | .3 | 23 | | | | .3 |
| 9 | | | .5 | .3 | 24 | | | | .4 |
| 10 | | | | .2 | 25 | | | | .4 |
| 11 | | | .35 | .2 | 26 | | | .45 | .5 |
| 12 | | | | .2 | 27 | | | | .5 |
| 13 | | | | 2 | 28 | | | | .5 |
| 14 | | | | .2 | 29 | 0.53 | 0.3 | .45 | .5 |
| 15 | | | .35 | .2 | 30 | | .3 | | .5 |
| | | | | | 31 | | .3 | | |

NOTE.—Daily discharge determined by indirect method for shifting channels. Mean discharge for Sept. 0.32 second-foot (19 acre-feet).

## SANTA YSABEL CREEK NEAR MESA GRANDE, CAL.

LOCATION.—In the NW. ¼ sec. 21, T. 12 S., R. 2 E., about 1 mile below Sutherland, and 4½ miles southwest of Mesa Grande.

RECORDS AVAILABLE.—December 29, 1912, to September 30, 1913.

DRAINAGE AREA.—53.4 square miles; measured on topographic map.

GAGE.—Sanders & Rising water-stage recorder on right bank at Sutherland dam site. A vertical staff is fastened to the outside of gage well. A temporary staff gage referred to a different datum was installed in the early part of December, 1912.

CHANNEL.—Shifting sand. A concrete control was installed at an outcropping of bedrock 20 feet below gage.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

ACCURACY.—Rating curve is well defined but recording-gage record at times was not very satisfactory. Discharge for periods not covered by gage height record has been estimated by comparison with the Santa Ysabel near Ramona. Results good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Santa Ysabel Creek near Mesa Grande, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 8 | E. W. Case | (a) | 3.0 | Apr. 18 | R. W. Day | 0.69 | 17 |
| 17 | F. C. Ebert | (b) | 2.9 | 23 | do | .60 | 9.5 |
| Jan. 17 | E. W. Case | 0.70 | 16 | 30 | do | .55 | 8.0 |
| Feb. 7 | do | .51 | 6.7 | May 19 | do | .49 | 4.8 |
| 14 | do | c.49 | 5.2 | 29 | do | .51 | 5.7 |
| 15 | do | d.48 | 4.9 | June 6 | do | .45 | 3.7 |
| 16 | do | e.47 | 4.6 | 11 | do | .48 | 4.0 |
| 18 | F. C. Ebert | .47 | 4.1 | 17 | F. C. Ebert | .37 | 2.4 |
| 20 | R. W. Day | .50 | 5.2 | 25 | R. W. Day | .31 | 1.5 |
| 26 | do | .81 | 26 | July 2 | do | .26 | 1.1 |
| Mar. 5 | do | .71 | 19 | 9 | do | .14 | .2 |
| 13 | do | .76 | 23 | 16 | do | .13 | .2 |
| 18 | F. C. Ebert | .66 | 14 | 23 | do | .15 | .3 |
| 26 | R. W. Day | f.76 | 23 | 29 | do | .22 | .6 |
| Apr. 3 | do | .72 | 18 | Aug. 27 | F. C. Ebert | .15 | .1 |
| 10 | do | .63 | 12 | | | | |

a Temporary staff gage read 1.7 feet.
b Temporary staff gage read 1.72 feet.
c Temporary staff gage read 1.80 feet.
d Temporary staff gage read 1.79 feet.
e Temporary staff gage read 1.80 feet.
f Temporary staff gage read 2.40 feet.

*Daily gage height, in feet, of Santa Ysabel Creek near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 0.4 | 0.5 | 0.85 | 0.7 | 0.55 | ..... | 0.3 | ..... | 0.15 |
| 2 | ..... | .4 | .5 | .85 | .7 | .55 | 0.5 | .25 | ..... | .15 |
| 3 | ..... | .4 | .5 | .85 | .7 | .55 | ..... | ..... | ..... | .15 |
| 4 | ..... | .4 | .5 | ..... | .7 | .55 | ..... | .3 | ..... | ..... |
| 5 | ..... | .4 | ..... | .7 | ..... | .55 | ..... | .4 | ..... | .05 |
| 6 | ..... | ..... | ..... | ..... | ..... | .55 | .45 | ..... | ..... | .05 |
| 7 | ..... | ..... | .5 | ..... | ..... | .5 | ..... | .2 | ..... | .05 |
| 8 | ..... | ..... | ..... | .8 | ..... | .5 | ..... | .2 | 0.05 | ..... |
| 9 | ..... | ..... | .5 | .8 | ..... | .5 | .45 | .15 | ..... | ..... |
| 10 | ..... | ..... | .5 | .8 | .65 | .5 | .45 | ..... | ..... | ..... |
| 11 | ..... | ..... | ..... | ..... | .6 | .5 | .5 | ..... | ..... | ..... |
| 12 | ..... | ..... | ..... | ..... | .6 | ..... | .4 | ..... | ..... | ..... |
| 13 | ..... | ..... | ..... | .75 | .6 | ..... | .4 | ..... | ..... | ..... |
| 14 | ..... | ..... | .5 | ..... | .6 | ..... | .4 | ..... | ..... | ..... |
| 15 | ..... | .5 | .5 | ..... | .6 | ..... | .4 | ..... | ..... | ..... |
| 16 | ..... | .95 | .45 | ..... | ..... | ..... | ..... | .15 | ..... | ..... |
| 17 | ..... | .7 | ..... | ..... | ..... | ..... | .35 | ..... | ..... | ..... |
| 18 | ..... | .6 | .45 | .65 | .7 | ..... | ..... | ..... | ..... | ..... |
| 19 | ..... | ..... | ..... | .65 | .6 | .5 | .45 | ..... | ..... | ..... |
| 20 | ..... | .5 | .5 | ..... | ..... | .5 | .4 | ..... | ..... | ..... |
| 21 | ..... | .5 | ..... | ..... | ..... | .5 | .3 | ..... | ..... | ..... |
| 22 | ..... | .5 | ..... | ..... | ..... | .5 | .3 | .15 | ..... | ..... |
| 23 | ..... | .45 | .7 | .85 | .6 | .5 | .45 | .15 | ..... | ..... |
| 24 | ..... | .45 | ..... | 1.1 | .6 | .5 | .5 | ..... | ..... | ..... |
| 25 | ..... | .5 | 1.3 | ..... | .55 | .5 | .3 | ..... | ..... | ..... |
| 26 | ..... | .5 | .8 | .75 | .55 | ..... | ..... | ..... | ..... | ..... |
| 27 | ..... | .5 | 1.1 | .75 | .55 | .5 | .5 | ..... | .15 | ..... |
| 28 | ..... | .45 | .85 | .75 | .55 | ..... | ..... | ..... | .15 | ..... |
| 29 | 0.4 | .45 | ..... | .75 | .55 | .5 | ..... | .2 | .1 | ..... |
| 30 | .4 | .45 | ..... | .7 | .55 | ..... | .45 | ..... | .1 | ..... |
| 31 | .4 | .45 | ..... | ..... | ..... | ..... | ..... | ..... | .15 | ..... |

*Daily discharge, in second-feet, of Santa Ysabel Creek near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 2.8 | 5 | 31 | 17 | 7.5 | 5 | 1.5 | 0.4 | 0.4 |
| 2 | ..... | 2.8 | 5 | 31 | 17 | 7.5 | 5 | .8 | .3 | .4 |
| 3 | ..... | 2.8 | 5 | 31 | 17 | 7.5 | 5 | 1.2 | .3 | .4 |
| 4 | ..... | 2.8 | 5 | 24 | 17 | 7.5 | 4.5 | 1.5 | .3 | .2 |
| 5 | ..... | 2.8 | 6 | 17 | 16 | 7.5 | 4 | 2.8 | .2 | .1 |
| 6 | ..... | 2.5 | 8 | 20 | 16 | 7.5 | 3.9 | 1.6 | .2 | .1 |
| 7 | ..... | 2.5 | 5 | 23 | 16 | 5 | 3.9 | .5 | .1 | .1 |
| 8 | ..... | 3 | 10 | 26 | 15 | 5 | 3.9 | .5 | .1 | .0 |
| 9 | ..... | 4 | 5 | 26 | 14 | 5 | 3.9 | .4 | .1 | .0 |
| 10 | ..... | 6 | 5 | 26 | 14 | 5 | 3.9 | .4 | .1 | .0 |
| 11 | ..... | 4 | 5 | 25 | 10 | 5 | 5 | .4 | .1 | .0 |
| 12 | ..... | 6 | 5 | 24 | 10 | 5 | 2.8 | .4 | .0 | .0 |
| 13 | ..... | 4.5 | 5 | 22 | 10 | 5 | 2.8 | .4 | .0 | .0 |
| 14 | ..... | 4.5 | 5 | 21 | 10 | 5 | 2.8 | .4 | .0 | .0 |
| 15 | ..... | 5 | 5 | 19 | 10 | 5 | 2.8 | .4 | .0 | .0 |
| 16 | ..... | 42 | 3.9 | 17 | 12 | 5 | 2.5 | .4 | .0 | .0 |
| 17 | ..... | 17 | 3.9 | 15 | 14 | 5 | 2.2 | .4 | .0 | .0 |
| 18 | ..... | 10 | 3.9 | 14 | 17 | 5 | 3 | .4 | .0 | .0 |
| 19 | ..... | 7.5 | 4 | 14 | 10 | 5 | 3.9 | .4 | 0 | .0 |
| 20 | ..... | 5 | 5 | 17 | 10 | 5 | 2.8 | .4 | .0 | .0 |
| 21 | ..... | 5 | 10 | 22 | 10 | 5 | 1.5 | .4 | .0 | .0 |
| 22 | ..... | 5 | 80 | 26 | 10 | 5 | 1.5 | .4 | .0 | .0 |
| 23 | ..... | 3.9 | 17 | 31 | 10 | 5 | 3.9 | .4 | .0 | .0 |
| 24 | ..... | 3.9 | 15 | 61 | 10 | 5 | 5 | .4 | .1 | .0 |
| 25 | ..... | 5 | 91 | 26 | 7.5 | 5 | 1.5 | .4 | .2 | .0 |
| 26 | ..... | 5 | 26 | 22 | 7.5 | 5 | 3 | .4 | .3 | .0 |
| 27 | ..... | 5 | 61 | 22 | 7.5 | 5 | 5 | .5 | .4 | .0 |
| 28 | ..... | 3.9 | 31 | 22 | 7.5 | 5 | 4.5 | .5 | .4 | .0 |
| 29 | 2.8 | 3.9 | ..... | 22 | 7.5 | 5 | 4 | .5 | .2 | .0 |
| 30 | 2.8 | 3.9 | ..... | 17 | 7.5 | 5 | 3.9 | .5 | .2 | .0 |
| 31 | 2.8 | 3.9 | ..... | 17 | ..... | 5 | ..... | .4 | .4 | ..... |

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge for days for which gage height is not recorded estimated by comparison with records Santa Ysabel Creek near Ramona and tributary streams.

*Monthly discharge of Santa Ysabel Creek near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| January | 42 | 2.5 | 6.00 | 369 | C. |
| February | 91 | 3.9 | 15.6 | 866 | C. |
| March | 61 | 14 | 23.6 | 1,450 | C. |
| April | 17 | 7.5 | 11.9 | 708 | C. |
| May | 7.5 | 5 | 7.42 | 456 | C. |
| June | 5 | 1.5 | 3.58 | 213 | C. |
| July | 2.8 | .4 | .65 | 40 | |
| August | .4 | .0 | .14 | 9 | |
| September | .4 | .0 | .06 | 4 | |
| The period | | | | 4,120 | |

## SANTA YSABEL CREEK NEAR RAMONA, CAL.

LOCATION.—In the NE. ¼ sec. 27, T. 12 S., R. 1 E., at Pamo, 1 mile below mouth of Temescal Creek, 4 miles north of Ramona, and 5 miles above the site of the station maintained at mouth of canyon near Escondido from 1906 to 1910.

RECORDS AVAILABLE.—February 5, 1912, to September 30, 1913.

DRAINAGE AREA.—110 square miles; measured on topographic map.

GAGE.—Staff in four sections on left bank.

CHANNEL.—Sand; somewhat shifting. On November 19, 1912, a concrete control was built about 30 feet below gage.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—Water is diverted fron Santa Ysabel Creek near the mouth of the canyon, 5 miles below the station, by East San Pasqual ditch, which takes out on the left bank, and West San Pasqual ditch, which takes out on the right bank and below the intake of East San Pasqual ditch.

ACCURACY.—Gage read three times daily, except at high stages, when it is read oftener; frequent discharge measurements are made, and results are good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Santa Ysabel Creek near Ramona, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 29 | F. C. Ebert | 0.06 | 2.2 | Mar. 24 | R. W. Day | 1.93 | 106 |
| Nov. 19 | E. W. Case | .99 | 2.4 | 31 | do | 1.44 | 24 |
| 20 | do | 1.01 | 2.5 | Apr. 9 | do | 1.36 | 17 |
| Dec. 8 | do | 1.09 | 3.5 | 16 | do | 1.28 | 15 |
| Jan. 10 | J. E. Gerish | 1.24 | 9.2 | 22 | do | 1.33 | 13 |
| 10 | W. S. Post | 1.25 | 8.5 | 29 | do | 1.27 | 9.5 |
| 16 | E. W. Case | 1.54 | 40 | May 6 | do | 1.25 | 6.6 |
| 17 | do | 1.42 | 22 | 11 | F. C. Ebert | 1.24 | 6.8 |
| 19 | J. E. Gerish | 1.31 | 13 | 17 | R. W. Day | 1.19 | 5.3 |
| Feb. 15 | W. S. Post | 1.23 | 6.9 | 23 | do | 1.17 | 4.6 |
| 17 | F. C. Ebert | 1.22 | 6.7 | 27 | do | 1.18 | 4.8 |
| 18 | do | 1.23 | 6.9 | June 3 | do | 1.16 | 4.7 |
| 22 | R. W. Day | 2.35 | 168 | 13 | do | 1.12 | 2.6 |
| 22 | do | 2.00 | 97 | 16 | F. C. Ebert | 1.11 | 1.7 |
| 25 | do | 1.74 | 56 | 26 | R. W. Day | 1.11 | 1.4 |
| 25 | do | 2.27 | 172 | July 2 | do | 1.00 | .7 |
| Mar. 4 | do | 1.47 | 27 | 8 | do | .71 | .1 |
| 11 | do | 1.39 | 21 | 14 | do | .70 | *a*.1 |
| 17 | do | 1.39 | 19 | 22 | do | .68 | (*b*) |
| 18 | F. C. Ebert | 1.39 | 18 | 30 | do | .75 | .2 |
| 20 | do | 1.46 | 25 | Aug. 28 | F. C. Ebert | .72 | *a*.05 |

*a* Estimated.

*b* Not enough water to measure.

*Daily gage height, in feet, of Santa Ysabel Creek near Ramona, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | −0.14 | 0.01 | 1.14 | 1.12 | 1.20 | 1.56 | 1.43 | 1.28 | 1.17 | 1.04 | 0.72 | 0.73 |
| 2 | −.14 | .01 | 1.14 | 1.11 | 1.18 | 1.51 | 1.48 | 1.27 | 1.18 | 1.02 | .72 | .74 |
| 3 | +.56 | .07 | 1.13 | 1.09 | 1.18 | 1.48 | 1.46 | 1.28 | 1.17 | 1.00 | .72 | .80 |
| 4 | .39 | .10 | 1.11 | 1.09 | 1.18 | 1.47 | 1.43 | 1.26 | 1.16 | .98 | .68 | .80 |
| 5 | .56 | .10 | 1.10 | 1.11 | 1.23 | 1.47 | 1.41 | 1.26 | 1.16 | .98 | .70 | .78 |
| 6 | .40 | .10 | 1.09 | 1.08 | 1.30 | 1.45 | 1.39 | 1.24 | 1.14 | .92 | .70 | .78 |
| 7 | .24 | .09 | 1.08 | 1.06 | 1.26 | 1.44 | 1.38 | 1.24 | 1.14 | .80 | .70 | .79 |
| 8 | .16 | .06 | 1.08 | 1.11 | 1.41 | 1.41 | 1.37 | 1.25 | 1.14 | .74 | .70 | .79 |
| 9 | .15 | .06 | 1.11 | 1.17 | 1.30 | 1.39 | 1.36 | 1.26 | 1.15 | .74 | .68 | .80 |
| 10 | .15 | ..... | 1.11 | 1.24 | 1.25 | 1.39 | 1.34 | 1.24 | 1.17 | .72 | .68 | .78 |
| 11 | .08 | ..... | 1.12 | 1.16 | 1.23 | 1.39 | 1.34 | 1.24 | 1.16 | .71 | .68 | .78 |
| 12 | .07 | ..... | 1.12 | 1.16 | 1.23 | 1.55 | 1.34 | 1.24 | 1.14 | .71 | .70 | .77 |
| 13 | .06 | 1.04 | 1.10 | 1.18 | 1.22 | 1.55 | 1.33 | 1.22 | 1.13 | .71 | .67 | ..... |
| 14 | .04 | 1.02 | 1.10 | 1.17 | 1.22 | 1.48 | 1.38 | 1.22 | 1.12 | .71 | .68 | .76 |
| 15 | .04 | 1.02 | 1.11 | 1.20 | 1.23 | 1.44 | 1.31 | 1.22 | 1.12 | .72 | .68 | .77 |
| 16 | .04 | 1.02 | 1.12 | 1.55 | 1.24 | 1.41 | 1.28 | 1.20 | 1.11 | .71 | .68 | .78 |
| 17 | .04 | 1.00 | 1.12 | 1.42 | 1.22 | 1.39 | 1.28 | 1.19 | 1.12 | .71 | .69 | .76 |
| 18 | .01 | .98 | 1.12 | 1.35 | 1.22 | 1.39 | 1.35 | 1.20 | 1.11 | .70 | .68 | .79 |
| 19 | .02 | .99 | 1.10 | 1.31 | 1.22 | 1.40 | 1.38 | 1.20 | 1.10 | .69 | .70 | .78 |
| 20 | .03 | 1.01 | 1.10 | 1.26 | 1.25 | 1.48 | 1.33 | 1.20 | 1.10 | .68 | .70 | .76 |
| 21 | .04 | 1.02 | 1.10 | 1.23 | 1.35 | 1.44 | 1.33 | 1.20 | 1.10 | .68 | .70 | .74 |
| 22 | .04 | .99 | 1.10 | 1.22 | 2.10 | 1.42 | 1.32 | 1.19 | 1.10 | .68 | .70 | .72 |
| 23 | .04 | .99 | 1.10 | 1.22 | 1.55 | 1.40 | 1.32 | 1.18 | 1.08 | .68 | .70 | .68 |
| 24 | .05 | .99 | 1.10 | 1.21 | 1.52 | 1.75 | 1.30 | 1.18 | 1.09 | .71 | .70 | .67 |
| 25 | .05 | 1.00 | 1.11 | 1.20 | 1.80 | 1.62 | 1.28 | 1.17 | 1.10 | .71 | .70 | .67 |
| 26 | .05 | 1.00 | 1.08 | 1.19 | 1.67 | 1.55 | 1.27 | 1.16 | 1.10 | .70 | .72 | .66 |
| 27 | .06 | 1.01 | 1.08 | 1.18 | 2.02 | 1.51 | 1.27 | 1.18 | 1.10 | .70 | .72 | .66 |
| 28 | .06 | 1.02 | 1.08 | 1.20 | 1.72 | 1.50 | 1.27 | 1.23 | 1.21 | .76 | .72 | .67 |
| 29 | .06 | 1.02 | 1.10 | 1.21 | ..... | 1.46 | 1.27 | 1.26 | 1.12 | .77 | .71 | .67 |
| 30 | .06 | 1.09 | 1.10 | 1.20 | ..... | 1.45 | 1.27 | 1.20 | 1.08 | .74 | .73 | .67 |
| 31 | .05 | ..... | 1.11 | 1.20 | ..... | 1.44 | ..... | 1.18 | ..... | .74 | .72 | ..... |

NOTE.—Gage height Oct. 3, 1912, Jan. 16, Feb. 21, Feb. 22 and 25, 1913, determined by means of a graph. Observer reads gage several times a day during flood stages. Concrete control completed Nov. 19, 1912. Gage heights Nov. 13—21, which were read on a temporary gage during construction of control, have been reduced to datum of regular gage by relation curve.

*Daily discharge, in second-feet, of Santa Ysabel Creek near Ramona, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.05 | 1 | 4.5 | 4 | 6 | 40 | 24 | 10 | 5.5 | 0.5 | 0.2 | 0.1 |
| 2 | .05 | 1 | 4.5 | 4 | 5.5 | 33 | 30 | 9.5 | 5.5 | .5 | .2 | .1 |
| 3 | 25 | 2 | 4.5 | 3.5 | 5.5 | 30 | 27 | 10 | 5.5 | .5 | .2 | .3 |
| 4 | 14 | 2.5 | 4 | 3.5 | 5.5 | 28 | 24 | 9 | 4.5 | .5 | .2 | .3 |
| 5 | 25 | 2.5 | 3.5 | 4 | 7.5 | 28 | 21 | 9 | 4 | .5 | .1 | .3 |
| 6 | 14 | 2.5 | 3.5 | 3.5 | 11 | 26 | 19 | 8 | 4 | .3 | .1 | .3 |
| 7 | 6.5 | 2.5 | 3.5 | 3 | 9 | 25 | 18 | 8 | 3.5 | .2 | .1 | .3 |
| 8 | 4 | 2 | 3.5 | 4 | 21 | 21 | 17 | 8.5 | 3.5 | .1 | .1 | .3 |
| 9 | 4 | 2 | 4 | 5.5 | 11 | 19 | 16 | 9 | 3.5 | .1 | .1 | .3 |
| 10 | 4 | 2 | 4 | 8 | 8.5 | 19 | 15 | 8 | 3.5 | .1 | .1 | .3 |
| 11 | 2 | 2 | 4 | 5 | 7.5 | 19 | 15 | 8 | 3 | .1 | .1 | .3 |
| 12 | 2 | 3 | 4 | 5 | 7.5 | 39 | 15 | 8 | 3 | .1 | .1 | .3 |
| 13 | 2 | 3 | 3.5 | 5.5 | 7 | 39 | 14 | 7 | 2.5 | .1 | .1 | .2 |
| 14 | 1.5 | 2.5 | 3.5 | 5.5 | 7 | 30 | 18 | 7 | 2.5 | .1 | .1 | .2 |
| 15 | 1.5 | 2.5 | 4 | 6 | 7.5 | 25 | 12 | 7 | 2 | .1 | .1 | .2 |
| 16 | 1.5 | 2.5 | 4 | 39 | 8 | 21 | 10 | 6 | 1.5 | .1 | .1 | .2 |
| 17 | 1.5 | 2.5 | 4 | 22 | 7 | 19 | 10 | 6 | 1.5 | .05 | .1 | .2 |
| 18 | 1 | 2.5 | 4 | 16 | 7 | 19 | 16 | 6 | 1.5 | .05 | .1 | .2 |
| 19 | 1.5 | 2.5 | 3.5 | 12 | 7 | 20 | 18 | 6 | 1.5 | .05 | .05 | .2 |
| 20 | 1.5 | 2.5 | 3.5 | 9 | 8.5 | 30 | 14 | 6 | 1.5 | .05 | .05 | .2 |
| 21 | 1.5 | 2.5 | 3.5 | 7.5 | 16 | 25 | 14 | 6 | 1.5 | .05 | .05 | .1 |
| 22 | 1.5 | 2.5 | 3.5 | 7 | 118 | 22 | 13 | 6 | 1.5 | .0 | .05 | .1 |
| 23 | 1.5 | 2.5 | 3.5 | 7 | 28 | 20 | 13 | 5.5 | 1.5 | .0 | .05 | .1 |
| 24 | 2 | 2.5 | 3.5 | 6.5 | 24 | 72 | 11 | 5.5 | 1.5 | .05 | .05 | .1 |
| 25 | 2 | 2.5 | 4 | 6 | 81 | 49 | 10 | 5.5 | 1.5 | .05 | .05 | .1 |
| 26 | 2 | 2.5 | 3.5 | 6 | 58 | 39 | 9.5 | 5.0 | 1.5 | .1 | .05 | .1 |
| 27 | 2 | 2.5 | 3.5 | 5.5 | 123 | 33 | 9.5 | 5.5 | 1.5 | .1 | .05 | .1 |
| 28 | 2 | 2.5 | 3.5 | 6 | 67 | 32 | 9.5 | 7.5 | 2 | .4 | .05 | .1 |
| 29 | 2 | 2.5 | 3.5 | 6.5 | ..... | 27 | 9.5 | 9 | 1 | .5 | .05 | .1 |
| 30 | 2 | 3.5 | 3.5 | 6 | ..... | 26 | 9.5 | 6 | 1 | .2 | .1 | .1 |
| 31 | 2 | ..... | 4 | 6 | ..... | 25 | ..... | 5.5 | ..... | .2 | .1 | ..... |

NOTE.—Daily discharge determined as follows: Oct. 1 to Nov. 9, 1912, from fairly well defined rating curves. Nov. 13, 1912, to Feb. 21, 1913, and Feb. 25 to June 3, 1913, from well-defined curves. Discharge Feb. 22—24 and June 4 to July 8 determined by indirect method for shifting channels. Discharge July 9 to Sept. 30, by interpolation between discharge measurements.

*Monthly discharge of Santa Ysabel Creek near Ramona, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 25 | 0.05 | 4.29 | 264 | C. |
| November | 3.5 | 1 | 2.38 | 142 | B. |
| December | 4.5 | 3.5 | 3.77 | 232. | B. |
| January | 39 | 3 | 7.68 | 472 | A. |
| February | 123 | 5.5 | 24.3 | 1,350 | A. |
| March | 72 | 19 | 29.0 | 1,780 | A. |
| April | 30 | 9.5 | 15.4 | 916 | A. |
| May | 10 | 5 | 7.19 | 442 | A. |
| June | 5.5 | 1 | 2.60 | 155 | B. |
| July | .5 | .05 | .19 | 12 | |
| August | .2 | .05 | .10 | 6 | |
| September | .3 | .1 | .19 | 11 | |
| The year | 123 | .05 | 7.99 | 5,780 | |

## SAN DIEGUITO RIVER AT BERNARDO, CAL.

LOCATION.—At highway bridge at Bernardo, on San Bernardo grant, 5 miles below junction of Santa Ysabel and Santa Maria creeks, and 16 miles above mouth of river.

RECORDS AVAILABLE.—April 17, 1912, to September 30, 1913.

DRAINAGE AREA.—266 square miles; measured on topographic maps.

GAGE.—Standard chain gage, fastened to upstream side of bridge. Length of chain 23.18 feet.

CHANNEL.—Sand and shifting.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet above gage or by wading.

DIVERSIONS.—East and West San Pasqual ditches divert water for irrigation from the Santa Ysabel at the upper end of San Pasqual Valley (see Santa Ysabel Creek near Ramona). Water for irrigation is also pumped from wells along the river.

ACCURACY.—Rating curve well defined; results good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Dieguito River at Bernardo, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Sept. 24 | | Dry. | Mar. 19 | 9.62 | 13 |
| Dec. 16 | 9.30 | 0.3 | Apr. 10 | 9.40 | .8 |
| Jan. 20 | 9.30 | *a*. 1 | May 12 | 9.38 | *a*. 1 |
| Mar. 12 | 9.75 | 25 | June 16 | 9.36 | *a*. 05 |

*a* Estimated.

*Daily gage height, in feet, of San Dieguito River at Bernardo, Cal., for the year ending Sept. 30, 1913.*

[S. C. Smith, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.85 | 9.25 | 9.3 | 9.3 | 9.3 | 9.85 | 9.8 | 9.4 | 9.35 | 9.3 | 9.05 | 8.9 |
| 2 | 8.85 | 9.25 | 9.3 | 9.3 | 9.3 | 9.75 | 9.8 | 9.4 | 9.35 | 9.3 | 9.05 | 8.9 |
| 3 | 8.9 | 9.3 | 9.3 | 9.3 | 9.3 | 9.75 | 9.8 | 9.4 | 9.35 | 9.3 | 9.05 | 8.9 |
| 4 | 8.95 | 9.3 | 9.3 | 9.3 | 9.3 | 9.65 | 9.7 | 9.4 | 9.35 | 9.3 | 9.0 | 8.9 |
| 5 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.65 | 9.4 | 9.3 | 9.3 | 9.0 | 8.9 |
| 6 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.6 | 9.4 | 9.3 | 9.3 | 9.0 | 8.9 |
| 7 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.5 | 9.4 | 9.3 | 9.3 | 9.0 | 8.85 |
| 8 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.45 | 9.4 | 9.3 | 9.25 | 9.0 | 8.85 |
| 9 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.4 | 9.3 | 9.25 | 9.0 | 8.85 |
| 10 | 9.05 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.4 | 9.3 | 9.25 | 9.0 | 8.85 |
| 11 | 9.05 | 9.3 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.4 | 9.35 | 9.25 | 9.0 | 8.85 |
| 12 | 9.05 | 9.3 | 9.3 | 9.3 | 9.3 | 9.7 | 9.4 | 9.4 | 9.35 | 9.25 | 9.0 | 8.85 |
| 13 | 9.05 | 9.3 | 9.3 | 9.3 | 9.3 | 9.75 | 9.4 | 9.4 | 9.35 | 9.2 | 9.0 | 8.8 |
| 14 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.75 | 9.4 | 9.4 | 9.35 | 9.2 | 9.0 | 8.8 |
| 15 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.7 | 9.4 | 9.4 | 9.35 | 9.2 | 8.95 | 8.8 |
| 16 | 9.0 | 9.3 | 9.3 | 9.3 | 9.3 | 9.65 | 9.4 | 9.4 | 9.35 | 9.2 | 8.95 | 8.8 |
| 17 | 9.0 | 9.25 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.4 | 9.35 | 9.15 | 8.95 | 8.8 |
| 18 | 9.0 | 9.25 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.35 | 9.35 | 9.15 | 8.95 | 8.8 |
| 19 | 9.0 | 9.25 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.35 | 9.35 | 9.15 | 8.95 | 8.8 |
| 20 | 9.0 | 9.25 | 9.3 | 9.3 | 9.3 | 9.6 | 9.4 | 9.35 | 9.35 | 9.15 | 8.95 | 8.75 |
| 21 | 9.0 | 9.25 | 9.3 | 9.3 | 9.3 | 9.65 | 9.4 | 9.35 | 9.35 | 9.15 | 8.95 | 8.75 |
| 22 | 9.0 | 9.3 | 9.3 | 9.3 | 9.55 | 9.65 | 9.4 | 9.35 | 9.3 | 9.15 | 8.95 | 8.75 |
| 23 | 9.05 | 9.3 | 9.3 | 9.3 | 9.7 | 9.75 | 9.4 | 9.35 | 9.3 | 9.1 | 8.95 | 8.75 |
| 24 | 9.05 | 9.3 | 9.3 | 9.3 | 9.65 | 9.9 | 9.4 | 9.35 | 9.3 | 9.1 | 8.95 | 8.75 |
| 25 | 9.1 | 9.3 | 9.3 | 9.3 | 9.6 | 10.05 | 9.4 | 9.3 | 9.3 | 9.1 | 8.9 | 8.75 |
| 26 | 9.15 | 9.3 | 9.3 | 9.3 | 10.1 | 9.95 | 9.4 | 9.3 | 9.3 | 9.1 | 8.9 | 8.75 |
| 27 | 9.2 | 9.3 | 9.3 | 9.3 | 9.6 | 9.9 | 9.4 | 9.3 | 9.3 | 9.1 | 8.9 | 8.75 |
| 28 | 9.2 | 9.3 | 9.3 | 9.3 | 9.6 | 9.85 | 9.4 | 9.3 | 9.3 | 9.1 | 8.9 | 8.75 |
| 29 | 9.2 | 9.3 | 9.3 | 9.3 | ..... | 9.8 | 9.4 | 9.35 | 9.3 | 9.1 | 8.9 | 8.75 |
| 30 | 9.2 | 9.3 | 9.3 | 9.3 | ..... | 9.7 | 9.4 | 9.35 | 9.3 | 9.1 | 8.9 | 8.75 |
| 31 | 9.25 | ..... | 9.3 | 9.3 | ..... | 9.7 | ..... | 9.35 | ..... | 9.05 | 8.9 | ..... |

NOTE.—River practically dry Oct. 1, 1912, to Jan. 31, 1913, and from about July 1 to Sept. 30, 1913, but gage height observations were continued to obtain measurements of ground-water plane.

*Daily discharge, in second-feet, of San Dieguito River at Bernardo, Cal., for the year ending Sept. 30, 1913.*

| Day. | Feb. | Mar. | Apr. | May. | Day. | Feb. | Mar. | Apr. | May. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 36 | 30 | 0.4 | 16 | 0.2 | 16 | 0.8 | 0.1 |
| 2 | .2 | 25 | 30 | .3 | 17 | .2 | 12 | .8 | .1 |
| 3 | .2 | 25 | 30 | .3 | 18 | .2 | 12 | .7 | .05 |
| 4 | .2 | 16 | 20 | .3 | 19 | .2 | 12 | .7 | .05 |
| 5 | .2 | 12 | 16 | .3 | 20 | .2 | 12 | .7 | .05 |
| 6 | .2 | 12 | 12 | .2 | 21 | .2 | 16 | .6 | .05 |
| 7 | .2 | 12 | 5 | .2 | 22 | 8 | 16 | .6 | .05 |
| 8 | .2 | 12 | 3 | .2 | 23 | 20 | 25 | .6 | .05 |
| 9 | .2 | 12 | 1 | .2 | 24 | 16 | 42 | .6 | .05 |
| 10 | .2 | 12 | 1 | .1 | 25 | 12 | 64 | .5 | .05 |
| 11 | .2 | 12 | .9 | .1 | 26 | 72 | 49 | .5 | .05 |
| 12 | .2 | 20 | .9 | .1 | 27 | 12 | 42 | .5 | .05 |
| 13 | .2 | 25 | .9 | .1 | 28 | 12 | 36 | .4 | .05 |
| 14 | .2 | 25 | .8 | .1 | 29 | ..... | 30 | .4 | .05 |
| 15 | .2 | 20 | .8 | .1 | 30 | ..... | 20 | .4 | .05 |
| | | | | | 31 | ..... | 20 | ..... | .05 |

NOTE.—Daily discharge determined from a well-defined rating curve.

*Monthly discharge of San Dieguito River at Bernardo, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | | | 0.0 | 0 | |
| November | | | *a*. 2 | 12 | |
| December | | | *a*. 2 | 12 | |
| January | | | *a*. 2 | 12 | |
| February | 72 | 0.2 | 5.58 | 310 | B. |
| March | 64 | 12 | 22.6 | 1,390 | A. |
| April | 30 | .4 | 5.37 | 320 | B. |
| May | .4 | .05 | .13 | 8 | |
| June | | | *a*. 05 | 3 | |
| July | | | .0 | 0 | |
| August | | | .0 | 0 | |
| September | | | .0 | 0 | |
| The year | 72 | 0 | 2.80 | 2,070 | |

*a* Estimated.

## SAN DIEGUITO RIVER NEAR DEL MAR, CAL.

LOCATION.—In the San Dieguito grant, at Santa Fe ranch pumping plant, about 4 miles above mouth, and 4½ miles northeast of Del Mar.

RECORD AVAILABLE.—October 1, 1912, to September 30, 1913.

DRAINAGE AREA.—328 square miles; measured on topographic maps.

GAGE.—Vertical staff on right bank about 300 feet from pump house.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made from bridge 2 miles below gage or by wading near gage.

DIVERSIONS.—See San Dieguito River at Bernardo. In addition Santa Fe ditch, having a capacity of about 10 second-feet, diverts water 300 feet above gage. The record at this station shows amount of water wasted into Pacific Ocean.

ACCURACY.—Discharge computed from rating curves covering short periods or by indirect method for shifting channels. Results fair.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Dieguito River near Del Mar, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 26 | W. S. Post | 2.20 | 26 | Mar. 14 | F. C. Ebett | 2.19 | 19 |
| Mar. 3 | do | 2.10 | 11 | 29 | E. W. Case | 2.08 | 13 |

*Daily gage height, in feet, and discharge, in second-feet, of San Dieguito River near Del Mar, Cal., for the year ending Sept. 30, 1913.*

[W. E. Maguire, observer.]

| Day. | Feb. | | Mar. | | Apr. | | Day. | Feb. | | Mar. | | Apr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 2.1 | 14 | 2.05 | 11 | 16 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 2 | ..... | ..... | 2.05 | 9 | 2.1 | 14 | 17 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 3 | ..... | ..... | 2.05 | 8 | 2.1 | 14 | 18 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 4 | ..... | ..... | 2.05 | 8 | 2.1 | 14 | 19 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 5 | ..... | ..... | 2.0 | 5 | 2.05 | 11 | 20 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 6 | ..... | ..... | 2.0 | 5 | 2.0 | 8 | 21 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 7 | ..... | ..... | 1.9 | 2 | 1.9 | 3 | 22 | ..... | ..... | 2.1 | 11 | ..... | ..... |
| 8 | ..... | ..... | 1.9 | 2 | ..... | ..... | 23 | ..... | ..... | 2.2 | 20 | ..... | ..... |
| 9 | ..... | ..... | 2.0 | 5 | ..... | ..... | 24 | ..... | ..... | 2.3 | 31 | ..... | ..... |
| 10 | ..... | ..... | 2.0 | 5 | ..... | ..... | 25 | ..... | ..... | 2.3 | 31 | ..... | ..... |
| 11 | ..... | ..... | 2.0 | 5 | ..... | ..... | 26 | 2.15 | 21 | 2.3 | 34 | ..... | ..... |
| 12 | ..... | ..... | 2.0 | 5 | ..... | ..... | 27 | 2.15 | 20 | 2.3 | 34 | ..... | ..... |
| 13 | ..... | ..... | 2.1 | 11 | ..... | ..... | 28 | 2.25 | 30 | 2.2 | 23 | ..... | ..... |
| 14 | ..... | ..... | 2.15 | 16 | ..... | ..... | 29 | ..... | ..... | 2.1 | 14 | ..... | ..... |
| 15 | ..... | ..... | 2.15 | 16 | ..... | ..... | 30 | ..... | ..... | 2.05 | 11 | ..... | ..... |
| | | | | | | | 31 | ..... | ..... | 2.05 | 11 | ..... | ..... |

NOTE.—Daily discharge determined as follows: Feb. 26 to Mar. 2, 1912, by indirect method for shifting channels; Mar. 3 to 25, 1913, from fairly well defined rating curves; Mar. 26 to Apr. 7, 1913, from poorly defined rating curves; stream dry Oct. 1, 1912, to Feb. 25, 1913, and Apr. 8 to Sept. 30, 1913.

*Monthly discharge of San Dieguito River near Del Mar, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0.0 | 0 | |
| November | 0 | 0 | .0 | 0 | |
| December | 0 | 0 | .0 | 0 | |
| January | 0 | 0 | .0 | 0 | |
| February | 30 | 0 | 2.5 | 139 | D. |
| March | 34 | 2 | 13.0 | 799 | C. |
| April | 14 | 0 | 2.5 | 149 | D. |
| May | 0 | 0 | .0 | 0 | |
| June | 0 | 0 | .0 | 0 | |
| July | 0 | 0 | .0 | 0 | |
| August | 0 | 0 | .0 | 0 | |
| September | 0 | 0 | .0 | 0 | |
| The year | 34 | 0 | 1.5 | 1,090 | |

## BLACK CANYON CREEK NEAR MESA GRANDE, CAL.

LOCATION.—In the NE. ¼ sec. 17, T. 12 S., R. 2 E., about 1 mile above junction with Santa Ysabel Creek, and about 4 miles southwest of Mesa Grande.

RECORDS AVAILABLE.—Discharge measurements February 14 to September 30, 1913. No gage height record obtained.

DRAINAGE AREA.—15.2 square miles; measured on topographic map.

GAGE.—Inclined staff on left bank.

CHANNEL.—Solid rock.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Black Canyon Creek near Mesa Grande, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 14 | E. W. Case | 1.00 | 0.7 | May 19 | R. W. Day | 0.37 | 0.8 |
| 15 | do | .99 | .6 | 23 | do | .43 | 1.2 |
| 16 | do | 1.01 | .8 | June 6 | do | .34 | .6 |
| 21 | R. W. Day | .55 | 2.9 | 11 | do | .37 | .6 |
| 28 | do | .98 | 11 | 17 | F. C. Ebert | .28 | .2 |
| Mar. 6 | do | .64 | 3.5 | 25 | R. W. Day | .22 | .1 |
| 14 | do | .72 | 4.5 | July 2 | do | .21 | 0 |
| 18 | F. C. Ebert | .60 | 3.0 | 10 | do | .13 | 0 |
| 28 | R. W. Day | .69 | 4.8 | 17 | do | .12 | 0 |
| Apr. 3 | do | .65 | 4.1 | 24 | do | .15 | 0 |
| 10 | do | .54 | 2.4 | 29 | do | .15 | 0 |
| 17 | do | .54 | 2.2 | Aug. 8 | do | .15 | 0 |
| 23 | do | .53 | 2.4 | 14 | do | .13 | 0 |
| 30 | do | .47 | 1.6 | 20 | do | .12 | 0 |
| May 7 | do | .43 | 1.4 | | | | |

## TEMESCAL CREEK NEAR ALMOND, CAL.

LOCATION.—In the NW. ¼ sec. 23, T. 12 S., R. 1 E., about 400 feet above junction with Santa Ysabel Creek, and 1½ miles south of Almond.

RECORDS AVAILABLE.—Discharge measurements February 15 to September 30, 1913. No gage height record secured.

DRAINAGE AREA.—31.5 square miles.

GAGE.—Inclined staff on right bank.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Temescal Creek near Almond, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 15 | W. S. Post | ..... | 0.8 | June 4 | R. W. Day | 0.52 | 0.2 |
| 22 | R. W. Day | 0.67 | 3.7 | 12 | do | .48 | .2 |
| 25 | do | .59 | 2.1 | 16 | F. C. Ebert | .44 | .2 |
| Mar. 7 | do | .63 | 1.0 | 26 | R. W. Day | .48 | .2 |
| 11 | do | .62 | 1.0 | July 2 | do | .43 | .1 |
| 18 | F. C. Ebert | .60 | .9 | 8 | do | .47 | .1 |
| 21 | R. W. Day | .60 | 1.0 | 14 | do | .44 | .1 |
| 25 | do | .60 | .8 | 22 | do | .50 | .1 |
| Apr. 1 | do | .60 | .8 | 29 | do | .54 | .1 |
| 9 | do | .60 | .6 | Aug. 5 | do | .50 | *a* 0 |
| 16 | do | .61 | .6 | 13 | do | .48 | *a* 0 |
| 22 | do | .62 | .6 | 22 | do | .52 | *a* 0 |
| 29 | do | .60 | .4 | 28 | F. C. Ebert | .51 | *b* .05 |
| May 6 | do | .60 | .4 | Sept. 2 | R. W. Day | .47 | *b* .02 |
| 11 | F. C. Ebert | .61 | .4 | 9 | do | .44 | Dry. |
| 17 | R. W. Day | .57 | .2 | 20 | do | .50 | .1 |
| 23 | do | .53 | .2 | 25 | do | .50 | *b* .02 |
| 27 | do | .55 | .4 | | | | |

*a* Practically dry. *b* Estimated.

## EAST SAN PASQUAL DITCH NEAR ESCONDIDO, CAL.

LOCATION.—In the NE. ¼ sec. 36, T. 12 S., R. 1 W., at upper end of San Pasqual Valley, about 9 miles southeast of Escondido.

RECORDS AVAILABLE.—June 9 to July 8, 1912; October 1, 1912, to September 30, 1913.

GAGE.—Gage heights are determined by measuring distance to water surface from reference point at top of flume.

CHANNEL.—Considerable silt from Santa Ysabel Creek is deposited in the ditch.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

ACCURACY.—Daily discharges for 1913 computed by indirect method for shifting channels. No estimates have been prepared for 1912, as sufficient discharge measurements were not made to determine the changes in the channel. Results fair.

COOPERATION.—Maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

The intake of East San Pasqual ditch is on the left bank of Santa Ysabel Creek near the mouth of the canyon. From August 15 to January 15 this ditch is entitled to the entire flow of the stream. During the remainder of the year it has a right to divert 16 second-feet for 10 consecutive days out of each 30.

*Discharge measurements of East San Pasqual ditch near Escondido, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 20 | F. C. Ebert | 0.70 | 9.3 | May 12 | F. C. Ebert | 0.82 | 4.8 |
| 24 | do | .53 | 6.0 | 20 | R. W. Day | .33 | 3.8 |
| Feb. 14 | do | .60 | 6.4 | June 2 | do | .35 | 3.7 |
| Mar. 13 | do | .64 | 4.0 | 12 | do | .65 | 2.3 |
| 19 | do | .63 | 3.6 | 16 | F. C. Ebert | | Dry. |
| Apr. 10 | do | 1.33 | 11 | 23 | R. W. Day | | Dry |
| May 5 | R. W. Day | 1.15 | 5.5 | July 1 | do | | Dry |

*Daily gage height, in feet, and discharge, in second-feet, of East San Pasqual ditch, Escondido, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | | Feb. | | Mar. | | Apr. | | May. | | June. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | | 0.5 | 5.5 | | | | | | | | 4.6 |
| 2 | | | | .45 | 4.9 | | | | | | | 0.4 | 3.7 |
| 3 | | | | | 5.2 | 0.45 | 1.8 | | | | | | 3.6 |
| 4 | | | | .5 | 5.5 | 1.05 | 8.3 | | | | | .4 | 3.4 |
| 5 | | | | | 10 | | 8.6 | | | 0.85 | 5.5 | | 3.3 |
| 6 | | | | 1.25 | 14 | 1.10 | 8.8 | | | | 5.4 | .25 | 3.1 |
| 7 | | | | | 14 | | 8.8 | 1.25 | 10 | .85 | 5.3 | | 3.0 |
| 8 | | | | 1.35 | 15 | 1.10 | 8.8 | 1.45 | 13 | | 5.2 | .4 | 2.9 |
| 9 | | 1.25 | | | 11 | | 6.6 | 1.35 | 12 | .85 | 5.1 | | 2.7 |
| 10 | | | | .65 | 7.1 | .7 | 4.5 | | 11 | | 5.0 | .25 | 2.6 |
| 11 | | .7 | | | 6.6 | | 4.0 | 1.2 | 10 | .85 | 4.9 | | 2.4 |
| 12 | | .7 | | .55 | 6.0 | .6 | 3.4 | 1.2 | 10 | .8 | 4.8 | .35 | 2.3 |
| 13 | | .75 | | | 6.0 | | 4.0 | 1.15 | 9.4 | .85 | 4.7 | | 1.5 |
| 14 | | | | .55 | 6.0 | .65 | 4.0 | | 8.8 | | 4.6 | .2 | .5 |
| 15 | | .6 | | | 5.8 | .65 | 4.0 | 1.05 | 8.3 | .7 | 4.5 | | |
| 16 | | 1.85 | | .5 | 5.5 | .6 | 3.4 | 1.2 | 10 | | 4.3 | | |
| 17 | | | | | 5.5 | | 3.2 | 1.15 | 9.4 | .75 | 4.1 | | |
| 18 | | | | .5 | 5.5 | .55 | 2.9 | | 4.7 | | 4.0 | | |
| 19 | | | | | 6.3 | .6 | 3.4 | | | .3 | 3.9 | | |
| 20 | | .7 | 9.3 | .65 | 7.1 | .85 | 6.1 | | | | 3.8 | | |
| 21 | 0.25 | .7 | 8.9 | .85 | 9.3 | | 6.9 | | | .25 | 2.8 | | |
| 22 | .4 | | 8.0 | 1.8 | 20 | 1.0 | 7.7 | | | | 2.5 | | |
| 23 | .4 | .6 | 7.1 | | 12 | | 3.8 | | | .2 | 2.2 | | |
| 24 | .35 | .55 | 6.0 | .7 | 4.5 | | | | | | 2.8 | | |
| 25 | | .6 | 6.6 | | | | | | | .3 | 3.3 | | |
| 26 | .45 | .45 | 4.9 | | | | | | | | 3.3 | | |
| 27 | .35 | .45 | 4.9 | | | | | | | .3 | 3.3 | | |
| 28 | .4 | | 5.2 | | | | | | | | 6.0 | | |
| 29 | .4 | .5 | 5.5 | | | | | | | .8 | 8.8 | | |
| 30 | .25 | | 5.5 | | | | | | | | 7.2 | | |
| 31 | .2 | .5 | 5.5 | | | | | | | .5 | 5.5 | | |

NOTE.—Ditch dry Oct. 1 to Dec. 20, 1912, Jan. 1 to 8, 17 to 19, Feb. 25 to Mar. 2, Mar. 24 to Apr. 6, Apr. 19 to May 4, and June 15 to Sept. 30, 1913.

Daily discharge determined by indirect method for shifting channels and interpolation between measurements. Owing to changes in channel, not covered by discharge measurements, no estimates have been made for periods prior to Jan. 17, 1913.

*Monthly discharge of East San Pasqual ditch near Escondido, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| January 17–31 | 9.3 | 0 | 5.16 | 154 |
| February | 20 | 0 | 7.08 | 393 |
| March | 8.8 | 0 | 3.65 | 224 |
| April | 13 | 0 | 3.89 | 231 |
| May | 8.8 | 0 | 3.96 | 243 |
| June | 4.6 | 0 | 1.65 | 98 |
| July | 0 | 0 | 0 | 0 |
| August | 0 | 0 | 0 | 0 |
| September | 0 | 0 | 0 | 0 |
| The period | | | | 1,340 |

NOTE.—Estimates are approximate, owing to shifting of channel.

## WEST SAN PASQUAL DITCH NEAR ESCONDIDO, CAL.

LOCATION.—In sec. 34, T. 12 S., R. 1 W., at upper end of San Pasqual Valley, about 7 miles southeast of Escondido.

RECORDS AVAILABLE.—May 6 to June 23, 1912; October 1, 1912, to September 30, 1913.

GAGE.—Vertical staff fastened to side of old culvert about 800 feet below headgate. New gage installed at different datum January 20, 1913.

CHANNEL.—Considerable silt from Santa Ysabel Creek is deposited in the ditch.
DISCHARGE MEASUREMENTS.—Made from foot plank across ditch near gage.
ACCURACY.—Rating curve fairly well defined; results are fair for 1913. No estimates prepared for 1912.
COOPERATION.—Station maintained in cooperation with Vulcan Land & Water Co., through W. S. Post, engineer.

The intake of West San Pasqual ditch is below that of East San Pasqual ditch and on the opposite side of Santa Ysabel Creek. From January 16 to August 14, if there is not sufficient water in the stream for both ditches, West San Pasqual ditch may take 16 second-feet for 20 consecutive days out of each 30.

*Discharge measurements of West San Pasqual ditch, near Escondido, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 18 | W. D. McFadden | (a) | 3.2 | Mar. 19 | F. C. Ebert | 2.05 | 6.7 |
| 20 | F. C. Ebert | 1.44 | .6 | 20 | do | 2.15 | 7.0 |
| 24 | do | 1.90 | 4.4 | Apr. 21 | R. W. Day | 2.32 | 8.9 |
| Mar. 13 | do | 2.06 | 5.7 | 29 | do | 1.94 | 4.7 |

a Old gage read 2.17 feet.

*Daily gage height, in feet, and discharge, in second-feet, of West San Pasqual ditch near Escondido, Cal., for 1912–13.*

[J. E. Dailey, observer.]

| Day. | Jan. | | Feb. | | Mar. | | Apr. | | May. | | June. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | 1.70 | 2.5 | 2.20 | 7.5 | | | 1.98 | 5 | | 0.5 |
| 2 | | | | 1.5 | | 6 | | | | | | |
| 3 | | | 1.40 | .5 | 1.90 | 4 | 1.95 | 4.5 | | | | |
| 4 | | | | | 2.00 | 5 | 2.02 | 5.5 | | | | |
| 5 | | | | | 1.95 | 4.5 | 1.72 | 2.5 | | | | |
| 6 | | | | | 1.95 | 4.5 | | 3 | | | | |
| 7 | | | | | 2.00 | 5 | 1.80 | 3 | | | | |
| 8 | | | | | 1.80 | 3 | 1.70 | 2.5 | | | | |
| 9 | | | | | | 4 | | | | | | |
| 10 | | | | | 2.00 | 5 | | | | | | |
| 11 | | | | | 1.90 | 4 | | | | | | |
| 12 | | | | | 1.70 | 2.5 | | | | | | |
| 13 | | | | | 2.02 | 5.5 | | | | | | |
| 14 | | | | | 1.88 | 4 | | | | | | |
| 15 | | | | | 2.08 | 6 | | | | | | |
| 16 | | | | 3 | | 6 | | | 1.58 | 1.5 | | |
| 17 | | | 1.80 | 3 | 2.10 | 6.5 | 2.25 | 8 | 1.45 | .5 | | |
| 18 | | 3 | 1.75 | 3 | 2.10 | 6.5 | 2.35 | 9.5 | | .5 | | |
| 19 | | 2 | 1.80 | 3 | 2.02 | 5.5 | 2.42 | 10 | 1.42 | .5 | | |
| 20 | 1.44 | .5 | 1.85 | 3.5 | 2.10 | 6.5 | | 10 | 1.58 | 1.5 | | |
| 21 | | 1.5 | 2.00 | 5 | 2.30 | 8.5 | 2.32 | 9 | 1.55 | 1 | | |
| 22 | | 2.5 | 1.80 | 3 | 1.95 | 4.5 | 2.28 | 8.5 | 1.45 | .5 | | |
| 23 | | 3 | | 3 | | 3 | 2.28 | 8.5 | | | | |
| 24 | 1.90 | 4 | 1.85 | 3.5 | 1.55 | 1 | 2.28 | 8.5 | | | | |
| 25 | 1.82 | 3.5 | 1.85 | 3.5 | 1.88 | 4 | 2.18 | 7.5 | | | | |
| 26 | | 3 | 2.10 | 6.5 | 2.00 | 5 | 2.10 | 6.5 | | | | |
| 27 | 1.78 | 3 | 2.05 | 6 | 2.02 | 5.5 | | 6 | | | | |
| 28 | 1.75 | 3 | 2.20 | 7.5 | 2.12 | 6.5 | 2.00 | 5 | | | | |
| 29 | | | | | 2.08 | 6 | 2.00 | 5 | | | | |
| 30 | | | | | | 6 | 2.00 | 5 | | | | |
| 31 | 1.72 | 2.5 | | | 2.12 | 6.5 | | | 1.50 | 1 | | |

NOTE.—Gage not read on Sundays between Jan. 24 and June 8, 1913. No water in ditch Oct. 1, 1912, to Jan. 17, 1913, Jan. 29, 30, Feb. 4 to 15, April 1, 2, 9 to 16, May 2 to 15 and 23 to 30, and June 2 to Sept. 30, 1913.
Daily discharge determined from a fairly well defined rating curve. Discharge interpolated for days on which gage was not read.

*Monthly discharge of West San Pasqual ditch near Escondido, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 0 | 0 | 0 | 0 | |
| January | 4 | 0 | 1.02 | 63 | C. |
| February | 7.5 | 0 | 2.07 | 115 | C. |
| March | 8.5 | 1 | 5.10 | 314 | C. |
| April | 10 | 0 | 4.27 | 254 | C. |
| May | 5 | 0 | .39 | 24 | |
| June | .5 | 0 | .02 | 1 | |
| July | 0 | 0 | 0 | 0 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 10 | 0 | 1.06 | 771 | |

## SANTA MARIA CREEK NEAR RAMONA, CAL.

LOCATION.—In the SE. ¼ SE. ¼ sec. 11, T. 13 S., R. 1 W., about 5½ miles west of Ramona.

RECORDS AVAILABLE.—November 6, 1912, to September 30, 1913.

DRAINAGE AREA.—57.3 square miles; measured on topographic maps.

GAGE.—Friez water-stage recorder on right bank with staff in two sections on opposite bank.

CHANNEL.—Shifting sand above and below station. Concrete control installed just below gage at an outcropping of solid rock.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet below gage or by wading.

ACCURACY.—Stream practically dry except for a few days in February and March. During rest of year the discharge was ground water brought to the surface by bedrock just below gage. Results approximate.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Santa Maria Creek near Ramona, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Apr. 17 | H. D. McGlashan | 1.35 | [a] 0.05 |
| June 16 | F. C. Ebert | 1.35 | [a] .05 |

[a] Estimated.

*Monthly discharge of Santa Maria Creek near Ramona, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| November 6 to 30 | 0.2 | 0.05 | 0.06 | 3 |
| December | .05 | .05 | .05 | 3 |
| January | .05 | .05 | .05 | 3 |
| February | .8 | .05 | .12 | 6.7 |
| March | .4 | .05 | .12 | 7.4 |
| April | .05 | .05 | .05 | 3 |
| May | ------ | ------ | a.05 | 3 |
| June | ------ | ------ | a.05 | 3 |
| July | .0 | .0 | .0 | 0 |
| August | .0 | .0 | .0 | 0 |
| September | .0 | .0 | .0 | 0 |
| The period | ------ | ------ | ------ | 32 |

a Estimated.

NOTE.—Estimates only approximate.

## SAN LUIS REY RIVER BASIN.

### SAN LUIS REY RIVER[1] NEAR WARNER SPRINGS, CAL.

LOCATION.—In the NE. ¼ sec. 17, T. 10 S., R. 3 E., in San Jose del Valle grant, about 3½ miles above junction with West Fork of San Luis Rey River, and 4 miles northwest of Warner Springs.

RECORDS AVAILABLE.—January 25 to September 30, 1913.

DRAINAGE AREA.—35.8 square miles; measured on topographic map.

GAGE.—Sanders & Rising water-stage recorder on left bank with staff in two sections on opposite bank.

CHANNEL.—Shifting sand. A concrete control has been built across the channel just below gage.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

ACCURACY.—On account of large number of discharge measurements secured and slight change in stage, the daily discharge has been computed mainly by interpolation between measurements and by comparison with record on San Luis Rey River near Mesa Grande. Results are good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Luis Rey River near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 25 | W. J. Isbell | 2.22 | 1.0 | May 31 | W. J. Isbell | 2.18 | 0.7 |
| 30 | do | 2.24 | 1.0 | June 6 | do | 2.17 | .7 |
| Feb. 4 | do | 2.23 | 1.0 | 12 | do | 2.18 | .7 |
| 11 | do | 2.23 | .9 | 14 | F. C. Ebert | 2.18 | .6 |
| 19 | F. C. Ebert | 2.22 | .9 | 18 | W. J. Isbell | 2.18 | .8 |
| Mar. 2 | W. J. Isbell | 2.20 | 1.3 | 25 | do | 2.19 | .6 |
| 16 | do | 2.19 | 1.1 | July 1 | do | 2.20 | .6 |
| 27 | do | 2.20 | .8 | 15 | do | 2.20 | .5 |
| Apr. 3 | do | 2.20 | .9 | 21 | do | 2.21 | .5 |
| 10 | do | 2.17 | 1.0 | Aug. 19 | do | 2.21 | .5 |
| 17 | do | 2.18 | .9 | 25 | do | 2.20 | .4 |
| 23 | do | 2.17 | .8 | Sept. 2 | do | (a) | .6 |
| May 1 | do | 2.19 | .8 | 10 | do | (a) | .6 |
| 10 | F. C. Ebert | 2.19 | .7 | 18 | do | 2.23 | .6 |
| 18 | W. J. Isbell | 2.18 | .8 | 22 | do | 2.18 | .6 |
| 23 | do | 2.18 | .7 | 29 | do | 2.22 | .5 |

[1] Local name Puerta la Cruz Creek.

a Water had cut under the control.

*Daily gage height, in feet, of San Luis Rey River near Warner Springs, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| 2 | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 3 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 4 | ..... | 2.25 | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 5 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 6 | ..... | ..... | ..... | 2.2 | 2.2 | 2.15 | 2.2 | 2.2 | ..... |
| 7 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 8 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 9 | ..... | ..... | ..... | 2.2 | 2.2 | 2.25 | 2.2 | 2.2 | ..... |
| 10 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 11 | ..... | 2.25 | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 12 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 13 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 14 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 15 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 16 | ..... | ..... | 2.2 | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 17 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 18 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.25 |
| 19 | ..... | 2.2 | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 20 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 21 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... |
| 22 | ..... | ..... | ..... | 2.2 | 2.2 | 2.2 | 2.25 | 2.2 | 2.2 |
| 23 | ..... | ..... | ..... | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| 24 | ..... | ..... | ..... | 2.15 | 2.2 | ..... | 2.2 | 2.2 | 2.2 |
| 25 | 2.2 | ..... | ..... | 2.15 | 2.15 | 2.2 | 2.2 | 2.2 | 2.2 |
| 26 | ..... | ..... | ..... | 2.15 | 2.15 | ..... | 2.2 | ..... | 2.2 |
| 27 | ..... | ..... | 2.2 | 2.15 | 2.2 | ..... | 2.2 | ..... | 2.2 |
| 28 | ..... | ..... | 2.2 | 2.2 | 2.2 | ..... | 2.2 | ..... | 2.2 |
| 29 | ..... | ..... | 2.2 | 2.2 | 2.2 | ..... | 2.2 | ..... | 2.2 |
| 30 | 2.25 | ..... | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | ..... | 2.25 |
| 31 | ..... | ..... | 2.2 | ..... | 2.2 | ..... | 2.2 | ..... | ..... |

NOTE.—Aug. 26 heavy rain undermined control for gage. Maximum recorded gage height 2.55 feet 7 p. m. Aug. 29; heavy storm at 6 p. m. raised river.

*Daily discharge, in second-feet, of San Luis Rey River near Warner Springs, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.0 | 1.5 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.6 |
| 2 | ..... | 1.0 | 1.3 | .9 | .8 | .7 | .6 | .5 | .6 |
| 3 | ..... | 1.0 | 1.5 | .9 | .8 | .7 | .6 | .5 | .6 |
| 4 | ..... | 1.0 | 1.5 | .9 | .8 | .7 | .6 | .5 | .6 |
| 5 | ..... | 1.5 | 1.5 | .9 | .8 | .7 | .6 | .5 | .6 |
| 6 | ..... | 2.0 | 1.5 | .9 | .7 | .7 | .6 | .5 | .6 |
| 7 | ..... | 2.0 | 1.5 | 1.0 | .7 | .7 | .6 | .5 | .6 |
| 8 | ..... | 4.0 | 1.5 | 1.0 | .7 | .7 | .5 | .5 | .6 |
| 9 | ..... | 2.5 | 1.5 | 1.0 | .7 | .7 | .5 | .5 | .6 |
| 10 | ..... | 1.5 | 1.5 | 1.0 | .7 | .7 | .5 | .5 | .6 |
| 11 | ..... | .9 | 1.5 | 1.0 | .7 | .7 | .5 | .5 | .6 |
| 12 | ..... | .9 | 2.5 | 1.0 | .7 | .7 | .5 | .5 | .6 |
| 13 | ..... | .9 | 2.0 | 1.0 | .7 | .6 | .5 | .5 | .6 |
| 14 | ..... | .9 | 1.5 | .9 | .7 | .6 | .5 | .5 | .6 |
| 15 | ..... | .9 | 1.1 | .9 | .8 | .6 | .5 | .5 | .6 |
| 16 | ..... | .9 | 1.1 | .9 | .8 | .7 | .5 | .5 | .6 |
| 17 | ..... | .9 | 1.1 | .9 | .8 | .7 | .5 | .5 | .6 |
| 18 | ..... | .9 | 1.1 | .9 | .8 | .8 | .5 | .5 | .6 |
| 19 | ..... | .9 | 1.1 | .9 | .8 | .8 | .5 | .5 | .6 |
| 20 | ..... | .9 | 1.1 | .9 | .8 | .8 | .5 | .5 | .6 |
| 21 | ..... | 6.0 | 1.1 | .8 | .7 | .7 | .5 | .5 | .6 |
| 22 | ..... | 21 | 1.5 | .8 | .7 | .7 | .5 | .5 | .6 |
| 23 | ..... | 5 | 2.0 | .8 | .7 | .7 | .5 | .4 | .6 |
| 24 | ..... | 7 | 3.0 | .8 | .7 | .6 | .5 | .4 | .6 |
| 25 | 1.0 | 2.5 | 1.5 | .8 | .7 | .6 | .5 | .4 | .6 |
| 26 | 1.0 | 10 | 1.0 | .8 | .7 | .6 | .5 | 10 | .5 |
| 27 | 1.0 | 15 | .8 | .8 | .7 | .6 | .5 | .6 | .5 |
| 28 | 1.0 | 3.0 | .8 | .8 | .7 | .6 | .5 | .6 | .5 |
| 29 | 1.0 | ..... | .8 | .8 | .7 | .6 | .5 | 2.0 | .5 |
| 30 | 1.0 | ..... | .8 | .8 | .7 | .6 | .5 | .8 | .6 |
| 31 | 1.0 | ..... | .9 | ..... | .7 | ..... | .5 | .6 | ..... |

NOTE.—As change in stage is usually small, daily discharge has been determined by interpolation between frequent discharge measurements and comparison with record of San Luis Rey River near Mesa Grande. Estimates Aug. 26 to 30 furnished by Volcan Land & Water Co.

*Monthly discharge of San Luis Rey River near Warner Springs, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| January 25–31 | 1.0 | 1.0 | 1.0 | 14 |
| February | 25 | .9 | 4.23 | 235 |
| March | 3.0 | .8 | 1.39 | 85 |
| April | 1.0 | .8 | .89 | 53 |
| May | .8 | .7 | .74 | 46 |
| June | .8 | .6 | .68 | 40 |
| July | .6 | .5 | .52 | 32 |
| August | 10 | .4 | .87 | 53 |
| September | .6 | .5 | .59 | 35 |
| The period | | | | 593 |

## SAN LUIS REY RIVER NEAR MESA GRANDE, CAL.

LOCATION.—In the NE. ¼ sec. 9, T. 11 S., R. 2 E., at concrete weir 1 mile below Warner dam site and about 5 miles north of Mesa Grande.

RECORDS AVAILABLE.—October 3, 1911, to September 30, 1913.

DRAINAGE AREA.—209 square miles, revised value; measured on military survey and United States Geological Survey topographic maps.

GAGE.—Barrett & Lawrence water-stage recorder on left bank just above weir. Staff gage in two sections at same site.

CHANNEL.—Sand and gravel; somewhat shifting. Concrete weir acts as control for gage.

DISCHARGE MEASUREMENTS.—Made from cable about a mile above gage or by wading.

ACCURACY.—Frequent discharge measurements are made; results are good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Luis Rey River near Mesa Grande, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 5 | H. L. Davis | 0.38 | 11 | Mar. 26 | W. J. Isbell | .51 | 27 |
| Nov. 15 | E. W. Case | .18 | 2.0 | 31 | Lee Case | .48 | 21 |
| 17 | W. J. Isbell | .18 | 1.7 | Apr. 4 | W. J. Isbell | .46 | 16 |
| Dec. 7 | do | .18 | 1.7 | 12 | do | .42 | 11 |
| 14 | do | .21 | 2.6 | 18 | H. D. McGlashan | .45 | 17 |
| 18 | do | .21 | 2.6 | 25 | W. J. Isbell | .33 | 7.8 |
| 21 | do | .22 | 2.4 | May 6 | do | .28 | 4.4 |
| 28 | do | .23 | 1.8 | 9 | F. C. Ebert | .28 | 3.8 |
| Jan. 4 | do | .23 | 3.0 | 12 | W. J. Isbell | .28 | 4.4 |
| 9 | do | .19 | 2.8 | 16 | do | .26 | 3.8 |
| 13 | do | .26 | 4.8 | 20 | do | .25 | 3.7 |
| 16 | do | .78 | 50 | 28 | do | .25 | 3.6 |
| 17 | do | .49 | 20 | June 3 | do | .26 | 2.2 |
| 24 | do | .37 | 7.0 | 9 | do | .24 | 1.7 |
| Feb. 1 | do | .33 | 5.1 | 13 | F. C. Ebert | .19 | 1.0 |
| 7 | do | .38 | 11 | 20 | W. J. Isbell | .23 | 1.5 |
| 8 | do | .61 | 36 | 26 | do | .22 | 1.3 |
| 14 | do | .34 | 6.4 | July 1 | do | .14 | .8 |
| 19 | F. C. Ebert | .29 | 6.3 | 10 | do | .14 | .6 |
| 20 | do | .33 | 7.5 | 18 | do | .19 | 1.1 |
| 22 | W. J. Isbell | 1.32 | 199 | 22 | do | .18 | .8 |
| 23 | do | .54 | 27 | Aug. 18 | do | .08 | .7 |
| 24 | do | .80 | 61 | 29 | F. C. Ebert | .12 | 1.0 |
| 25 | do | 2.04 | 373 | 31 | do | .20 | 3.2 |
| 25 | do | 1.80 | 303 | Sept. 4 | W. J. Isbell | .08 | .7 |
| 26 | do | .82 | 66 | 12 | do | .09 | 1.0 |
| Mar. 2 | do | .57 | 29 | 15 | do | .06 | .8 |
| 14 | do | .58 | 31 | 27 | do | .10 | 1.0 |
| 21 | do | .48 | 20 | | | | |

NOTE.—Measurements Aug. 18 to Sept. 27, 1913, referred to datum of temporary gage installed Aug. 18, 1913.

*Daily gage height, in feet, of San Luis Rey River near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.17 | 0.20 | 0.19 | 0.21 | 0.34 | 0.59 | 0.48 | 0.32 | 0.26 | 0.14 | 0.18 | 0.11 |
| 2 | .17 | .21 | .19 | .21 | .34 | .57 | .49 | .32 | .26 | .15 | .18 | .10 |
| 3 | .50 | .18 | .19 | .22 | .34 | .57 | .48 | .31 | .26 | .16 | .18 | .09 |
| 4 | .32 | .18 | .20 | .23 | .34 | .55 | .45 | .30 | .26 | .17 | .18 | .08 |
| 5 | .38 | .18 | .20 | .22 | .37 | .54 | .46 | .29 | .26 | .17 | .19 | .08 |
| 6 | .28 | .18 | .20 | .25 | .40 | .56 | .45 | .28 | .25 | .17 | .19 | .08 |
| 7 | .24 | .18 | .18 | .22 | .38 | .57 | .44 | .28 | .24 | .17 | .20 | .08 |
| 8 | .23 | .18 | .18 | .17 | .53 | .57 | .42 | .28 | .24 | .17 | .20 | .09 |
| 9 | .22 | .18 | .19 | .19 | .46 | .55 | .43 | .28 | .24 | .16 | .20 | .09 |
| 10 | .22 | .18 | .19 | .24 | .38 | .53 | .42 | .28 | .22 | .15 | .20 | .09 |
| 11 | .24 | .18 | .20 | .40 | .34 | .57 | .39 | .28 | .21 | .18 | .20 | .09 |
| 12 | .24 | .18 | .20 | .26 | .34 | .75 | .36 | .28 | .20 | .18 | .20 | .09 |
| 13 | .24 | .18 | .20 | .26 | .33 | .67 | .37 | .28 | .19 | .17 | .20 | .08 |
| 14 | .25 | .18 | .21 | .26 | .34 | .57 | .37 | .27 | .19 | .16 | .10 | .07 |
| 15 | .24 | .18 | .20 | .30 | .33 | .51 | .38 | .26 | .20 | .16 | .09 | .06 |
| 16 | .24 | .18 | .21 | .80 | .32 | .50 | .38 | .26 | .21 | .17 | .09 | .07 |
| 17 | .24 | .18 | .22 | .50 | .31 | .50 | .37 | .26 | .22 | .18 | .08 | .07 |
| 18 | .23 | .18 | .22 | .43 | .30 | .48 | .44 | .25 | .22 | .19 | .08 | .08 |
| 19 | .23 | .18 | .23 | .38 | .29 | .48 | .42 | .25 | .23 | .19 | .09 | .09 |
| 20 | .23 | .18 | .23 | .37 | .31 | .50 | .41 | .25 | .23 | .20 | .10 | .09 |
| 21 | .22 | .18 | .23 | .37 | .66 | .48 | ..... | .25 | .21 | .19 | .11 | .10 |
| 22 | .22 | .19 | .23 | .36 | 1.20 | .53 | ..... | .25 | .20 | .18 | .11 | .10 |
| 23 | .22 | .19 | .23 | .36 | .60 | .62 | .36 | .25 | .20 | .17 | .12 | .10 |
| 24 | .21 | .19 | .25 | .37 | .72 | .78 | .35 | .25 | .20 | .17 | .13 | .10 |
| 25 | .21 | .19 | .25 | .37 | 1.42 | .60 | .33 | .25 | .22 | .18 | .13 | .10 |
| 26 | .21 | .19 | .24 | .37 | .87 | .55 | .33 | .25 | .22 | .19 | .11 | .10 |
| 27 | .21 | .19 | .23 | .37 | 1.16 | .53 | .32 | .25 | ..... | .20 | .11 | .10 |
| 28 | .21 | .19 | .23 | .36 | .78 | .52 | .32 | .25 | ..... | .20 | .53 | .10 |
| 29 | .21 | .19 | .22 | .35 | ..... | .50 | .32 | .25 | ..... | .19 | .42 | .10 |
| 30 | .20 | .19 | .21 | .32 | ..... | .49 | .32 | .26 | ..... | .19 | .19 | .10 |
| 31 | .20 | ..... | .21 | .32 | ..... | .48 | ..... | .26 | ..... | .18 | .12 | ..... |

NOTE.—Automatic gage stopped Jan. 6, 7, 11, and 12, and Apr. 21, 22, 1913. Maximum, Jan. 16, 1.55 feet; Feb. 21, 1.65 feet, night of Feb. 21–22; Feb. 25, 2.2 feet.
Cloudburst in mountains Aug. 28, 1913, caused increased flow. Maximum gage height 3.3 feet, caused by washing away of tunnel débris fill across river, 1 mile upstream.

*Daily discharge, in second-feet, of San Luis Rey River near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 2 | 2 | 2 | 5.5 | 33 | 20 | 6.5 | 2.5 | 0.7 | 0.9 | 1 |
| 2 | 1.5 | 2.5 | 2 | 2 | 5.5 | 30 | 20 | 6.5 | 2 | .7 | .9 | 1 |
| 3 | 22 | 2 | 2 | 2.5 | 5.5 | 30 | 18 | 6 | 2 | .7 | .9 | .8 |
| 4 | 7 | 2 | 2 | 3 | 5.5 | 28 | 15 | 5.5 | 2 | .8 | .9 | .7 |
| 5 | 11 | 2 | 2 | 2.5 | 7.5 | 27 | 16 | 5 | 2 | .8 | 1 | .7 |
| 6 | 4.5 | 2 | 2 | 3.5 | 13 | 29 | 15 | 4.5 | 2 | .8 | 1 | .7 |
| 7 | 3 | 2 | 2 | 3.5 | 11 | 30 | 14 | 4.5 | 1.5 | .8 | 1 | .7 |
| 8 | 3 | 2 | 2 | 2.5 | 26 | 30 | 12 | 4 | 1.5 | .8 | 1 | .8 |
| 9 | 2.5 | 2 | 2 | 3 | 16 | 28 | 13 | 4 | 1.5 | .7 | 1 | .8 |
| 10 | 2.5 | 2 | 2 | 4 | 9 | 26 | 12 | 4 | 1.5 | .7 | 1 | .9 |
| 11 | 3 | 2 | 2 | 13 | 6 | 30 | 9 | 4.5 | 1 | .9 | 1 | .9 |
| 12 | 3 | 2 | 2 | 5 | 6 | 56 | 7 | 4.5 | 1 | .9 | 1 | 1 |
| 13 | 3 | 2 | 2 | 5 | 5.5 | 44 | 7.5 | 4.5 | 1 | .8 | 1 | .9 |
| 14 | 3.5 | 2 | 2.5 | 5 | 6.5 | 30 | 7.5 | 4 | 1 | .7 | .8 | .9 |
| 15 | 3 | 2 | 2 | 6.5 | 6.5 | 23 | 8.5 | 4 | 1 | .7 | .8 | .8 |
| 16 | 3 | 2 | 2.5 | 64 | 6.5 | 22 | 8.5 | 4 | 1 | .8 | .8 | .9 |
| 17 | 3 | 2 | 2.5 | 21 | 6.5 | 22 | 7.5 | 4 | 1.5 | .9 | .7 | .9 |
| 18 | 3 | 2 | 2.5 | 13 | 6.5 | 20 | 16 | 4 | 1.5 | 1 | .7 | .9 |
| 19 | 3 | 2 | 3 | 8.5 | 6.5 | 20 | 14 | 3.5 | 1.5 | 1 | .7 | .9 |
| 20 | 3 | 2 | 3 | 7.5 | 6.5 | 22 | 14 | 3.5 | 1.5 | 1 | .8 | .9 |
| 21 | 2.5 | 2 | 3 | 7.5 | 48 | 20 | 12 | 3.5 | 1 | 1 | .8 | 1 |
| 22 | 2.5 | 2 | 2.5 | 7 | 170 | 26 | 11 | 3.5 | 1 | .9 | .8 | 1 |
| 23 | 2.5 | 2 | 2.5 | 7 | 34 | 37 | 9.5 | 3.5 | 1 | .8 | .8 | 1 |
| 24 | 2.5 | 2 | 3 | 7.5 | 52 | 61 | 9 | 3.5 | 1 | .8 | .9 | 1 |
| 25 | 2.5 | 2 | 2.5 | 7.5 | 200 | 36 | 8 | 3.5 | 1.5 | .9 | .9 | 1 |
| 26 | 2.5 | 2 | 2 | 7.5 | 77 | 32 | 8 | 3.5 | 1.5 | 1 | .8 | 1 |
| 27 | 2.5 | 2 | 2 | 7.5 | 135 | 29 | 7 | 3.5 | 1.5 | 1 | .8 | 1 |
| 28 | 2.5 | 2 | 2 | 7 | 61 | 27 | 7 | 3.5 | 1 | 1 | 26 | 1 |
| 29 | 2.5 | 2 | 2 | 6.5 | ..... | 24 | 7 | 3 | 1 | 1 | 14 | 1 |
| 30 | 2 | 2 | 1.5 | 4.5 | ..... | 22 | 6.5 | 3 | .9 | 1 | 2.5 | 1 |
| 31 | 2 | ..... | 2 | 4.5 | ..... | 21 | ..... | 3 | ..... | .9 | 1.5 | ..... |

NOTE.—Daily discharge determined from mean rating curves covering short periods and by indirect method for shifting channels.

*Monthly discharge of San Luis Rey River near Mesa Grande, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 22 | 1.5 | 3.73 | 229 | B. |
| November | 2.5 | 2 | 2.02 | 120 | B. |
| December | 3 | 1.5 | 2.23 | 137 | B. |
| January | 64 | 2 | 8.10 | 498 | B. |
| February | 200 | 5.5 | 33.7 | 1,870 | B. |
| March | 61 | 20 | 29.5 | 1,810 | B. |
| April | 20 | 6.5 | 11.3 | 672 | B. |
| May | 6.5 | 3 | 4.13 | 254 | B. |
| June | 2.5 | .9 | 1.40 | 83 | C. |
| July | 1 | .7 | .85 | 52 | C. |
| August | 26 | .7 | 2.18 | 134 | C. |
| September | 1 | .7 | .90 | 54 | C. |
| The year | 200 | .7 | 8.18 | 5,910 | |

## SAN LUIS REY RIVER NEAR PALA, CAL.

LOCATION.—In the NW. ¼ sec. 31, T. 9 S., R. 1 W., above ford on road to Sickler's mill, about 4 miles southeast of Pala.

RECORDS AVAILABLE.—October 9, 1903, to June 30, 1911, and November 14, 1912, to September 30, 1913.

DRAINAGE AREA.—322 square miles, revised estimate; area measured on military survey and United States Geological Survey topographic maps.

GAGE.—Friez water-stage recorder on left bank 600 feet above ford. There is a staff gage in three sections at the same site. Previous to September 19, 1912, gage was located about 50 feet above ford. Original datum has not been maintained.

CHANNEL.—Sand, gravel, and bowlders; shifting. On September 19, 1912, an artificial control, consisting of short concrete cut-off walls between the bowlders, was built across channel just below gage.

DISCHARGE MEASUREMENTS.—Made from cable 550 feet below recording gage or by wading.

DIVERSIONS AND STORAGE.—Water is diverted for irrigation on the Rincon Indian Reservation. The Escondido Mutual Water Co. diverts water from San Luis Rey River about 10 miles above the station. This water, which is stored at the Escondido Reservoir, about 6 miles northeast of Escondido, is used for irrigation and municipal purposes at Escondido and vicinity. The capacity of the reservoir is 3,120 acre-feet. Water is diverted from Pauma Creek for irrigation on the Pauma Indian Reservation and Pauma Rancho.

ACCURACY.—Rating curve is fairly well defined; results are excellent.

*Discharge measurements of San Luis Rey River near Pala, Cal., during the period Sept. 20, 1912, to Sept. 30, 1913.*

| Date. | Made by— | Gage height.[a] | Discharge. | Date. | Made by— | Gage height.[a] | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Sept. 20 | F. C. Ebert | 5.60 | 3.4 | Mar. 15 | E. W. Case | 6.30 | 28 |
| Oct. 30 | do | 5.65 | 4.9 | Apr. 18 | H. D. McGlashan | 5.86 | 15 |
| Nov. 4 | do | 5.69 | 5.3 | May 9 | F. C. Ebert | 5.62 | 5.8 |
| Dec. 18 | do | 5.73 | 7.7 | June 13 | do | 5.60 | 5.2 |
| Jan. 18 | do | 6.05 | 28 | July 25 | R. W. Day | 5.44 | 1.9 |
| 19 | do | 6.00 | 24 | Aug. 31 | F. C. Ebert | 5.59 | 2.2 |
| Feb. 20 | do | 5.77 | 9.4 | | | | |

[a] New gage.

NOTE.—Artifical control repaired to original level on Aug. 29 and 30, 1913.

*Daily gage height, in feet, of San Luis Rey River near Pala, Cal., for the year ending Sept. 30, 1913.*

[Allen Bowdish, observer.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 5.75 | | 5.8 | | 5.8 | 5.75 | 5.55 | | | 5.55 |
| 2 | | 5.75 | | 5.8 | 6.05 | 5.8 | | 5.55 | | | 5.55 |
| 3 | | 5.75 | | 5.8 | 6.0 | 5.8 | | 5.55 | | | 5.55 |
| 4 | | 5.75 | | 5.8 | 5.9 | 5.8 | 5.65 | 5.55 | | | 5.55 |
| 5 | | 5.75 | 5.75 | 5.8 | 5.9 | 5.85 | 5.65 | 5.55 | | | 5.55 |
| 6 | | 5.75 | | 5.8 | 5.9 | 5.85 | 5.65 | 5.55 | | | 5.55 |
| 7 | | 5.7 | | 5.85 | 5.9 | 5.85 | 5.65 | 5.55 | | | 5.55 |
| 8 | | 5.7 | | 5.9 | 5.9 | 5.85 | 5.65 | 5.55 | | | |
| 9 | | 5.7 | | 5.9 | 5.95 | 5.8 | 5.6 | | | | |
| 10 | | 5.7 | 5.85 | | 6.0 | 5.75 | 5.6 | 5.55 | | | |
| 11 | | 5.75 | 5.85 | | 6.05 | 5.75 | 5.6 | | | | |
| 12 | | 5.75 | 5.85 | | 6.15 | 5.75 | 5.6 | | | | |
| 13 | | 5.75 | 5.85 | | 6.25 | | 5.6 | 5.6 | 5.5 | | |
| 14 | 5.7 | 5.75 | 5.85 | | 6.15 | | 5.6 | 5.6 | 5.5 | 5.5 | |
| 15 | | 5.75 | 6.6 | | 6.0 | | 5.6 | 5.6 | 5.5 | 5.5 | 5.55 |
| 16 | | 5.75 | | 5.75 | 5.95 | | 5.6 | 5.6 | 5.5 | 5.5 | 5.55 |
| 17 | 5.7 | 5.75 | | 5.75 | 5.9 | 5.75 | 5.6 | 5.55 | 5.5 | 5.55 | 5.55 |
| 18 | 5.7 | 5.75 | 6.05 | 5.75 | 5.85 | 5.85 | 5.6 | 5.55 | 5.5 | 5.55 | 5.55 |
| 19 | 5.7 | 5.75 | 6.0 | 5.75 | 5.85 | 5.9 | 5.6 | 5.55 | 5.5 | 5.55 | 5.55 |
| 20 | 5.7 | 5.75 | 5.85 | 5.75 | 5.85 | 5.8 | | 5.6 | 5.5 | 5.55 | 5.6 |
| 21 | 5.7 | 5.75 | 5.85 | 5.85 | 5.8 | 5.75 | 5.6 | 5.6 | | | 5.6 |
| 22 | 5.7 | 5.75 | 5.8 | 6.6 | 5.85 | 5.75 | 5.6 | 5.5 | | | 5.6 |
| 23 | 5.65 | 5.75 | 5.8 | 6.25 | 5.85 | 5.7 | 5.6 | 5.5 | 5.45 | | 5.6 |
| 24 | 5.65 | 5.75 | 5.8 | 6.05 | 6.05 | 5.7 | 5.6 | 5.5 | 5.45 | | 5.6 |
| 25 | 5.7 | 5.75 | 5.8 | 6.1 | 6.2 | 5.7 | 5.6 | 5.5 | 5.45 | | 5.6 |
| 26 | 5.7 | 5.75 | 5.8 | 6.15 | 5.9 | 5.7 | 5.6 | | 5.5 | | 5.6 |
| 27 | 5.7 | 5.75 | 5.75 | 6.15 | 5.85 | 5.7 | 5.6 | | 5.5 | | 5.6 |
| 28 | 5.7 | | 5.75 | | 5.85 | 5.7 | 5.6 | | 5.5 | | 5.6 |
| 29 | 5.75 | | 5.75 | | 5.8 | 5.7 | | | 5.5 | 5.6 | 5.6 |
| 30 | 5.75 | | 5.75 | | 5.8 | 5.75 | | | 5.5 | 5.6 | 5.65 |
| 31 | | | 5.75 | | 5.8 | | | | | 5.6 | |

NOTE.—Maximum gage height Jan. 16 not higher than 6.8 feet, determined from well-defined flood mark. Maximum gage height Feb. 22, 7 feet at noon.

*Daily discharge, in second-feet, of San Luis Rey River near Pala, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 9 | 9 | 11 | 31 | 11 | 9 | 4 | 3 | 3 | 2 |
| 2 | | 9 | 9 | 11 | 28 | 11 | 8 | 4 | 3 | 3 | 2 |
| 3 | | 9 | 9 | 11 | 24 | 11 | 8 | 4 | 3 | 3 | 2 |
| 4 | | 9 | 9 | 11 | 17 | 11 | 7 | 4 | 3 | 3 | 2 |
| 5 | | 9 | 9 | 11 | 17 | 14 | 7 | 4 | 3 | 3 | 2 |
| 6 | | 9 | 10 | 11 | 17 | 14 | 7 | 4 | 3 | 3 | 2 |
| 7 | | 6 | 11 | 14 | 17 | 14 | 7 | 4 | 3 | 3 | 2 |
| 8 | | 6 | 12 | 17 | 17 | 14 | 7 | 4 | 3 | 3 | 2 |
| 9 | | 6 | 13 | 17 | 20 | 11 | 5 | 4 | 3 | 3 | 2 |
| 10 | | 6 | 14 | 16 | 24 | 9 | 5 | 4 | 3 | 3 | 2 |
| 11 | | 9 | 14 | 15 | 28 | 9 | 5 | 4 | 3 | 3 | 2 |
| 12 | | 9 | 14 | 14 | 36 | 9 | 5 | 5 | 3 | 3 | 2 |
| 13 | | 9 | 14 | 12 | 46 | 9 | 5 | 5 | 3 | 3 | 2 |
| 14 | 6 | 9 | 14 | 11 | 36 | 9 | 5 | 5 | 3 | 3 | 2 |
| 15 | 6 | 9 | 86 | 10 | 24 | 9 | 5 | 5 | 3 | 3 | 2 |
| 16 | 6 | 9 | 86 | 9 | 20 | 9 | 5 | 5 | 3 | 3 | 2 |
| 77 | 6 | 9 | 60 | 9 | 17 | 9 | 5 | 4 | 3 | 3 | 2 |
| 18 | 6 | 9 | 28 | 9 | 14 | 14 | 5 | 4 | 3 | 3 | 2 |
| 19 | 6 | 9 | 24 | 9 | 14 | 17 | 5 | 4 | 3 | 3 | 2 |
| 20 | 6 | 9 | 14 | 9 | 14 | 11 | 5 | 5 | 3 | 3 | 3 |
| 21 | 6 | 9 | 14 | 14 | 11 | 9 | 5 | 5 | 3 | 3 | 3 |
| 22 | 6 | 9 | 11 | 86 | 14 | 9 | 5 | 3 | 2 | 3 | 3 |
| 23 | 5 | 9 | 11 | 46 | 14 | 6 | 5 | 3 | 2 | 3 | 3 |
| 24 | 5 | 9 | 11 | 28 | 28 | 6 | 5 | 3 | 2 | 3 | 3 |
| 25 | 6 | 9 | 11 | 32 | 41 | 6 | 5 | 3 | 2 | 3 | 3 |
| 26 | 6 | 9 | 11 | 36 | 17 | 6 | 5 | 3 | 3 | 3 | 3 |
| 27 | 6 | 9 | 9 | 36 | 14 | 6 | 5 | 3 | 3 | 3 | 3 |
| 28 | 6 | 9 | 9 | 33 | 14 | 6 | 5 | 3 | 3 | 3 | 3 |
| 29 | 9 | 9 | 9 | | 11 | 6 | 5 | 3 | 3 | 3 | 3 |
| 30 | 9 | 9 | 9 | | 11 | 9 | 4 | 3 | 3 | 3 | 5 |
| 31 | | 9 | 9 | | 11 | | 4 | | 3 | 3 | |

NOTE.—Daily discharge determined from well-defined rating curves applicable as follows: Oct. 30, 1912, to May 1, 1913; Aug. 29 to Sept. 30, 1913; May 4 to Aug. 20, 1913. Discharge for days for which gage height is not recorded interpolated or estimated by comparison with record for San Luis Rey River near Mesa Grande.

*Monthly discharge of San Luis Rey River near Pala, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| November 14–30 | 9 | 6 | 6.2 | 209 | B. |
| December | 9 | 6 | 8.6 | 529 | B. |
| January | 86 | 9 | 18.5 | 1,140 | B. |
| February | 86 | 9 | 19.6 | 1,090 | B. |
| March | 46 | 11 | 20.9 | 1,290 | B. |
| April | 17 | 6 | 9.8 | 583 | B. |
| May | 9 | 4 | 5.6 | 344 | B. |
| June | 5 | 3 | 3.9 | 232 | C. |
| July | 3 | 2 | 2.9 | 178 | C. |
| August | 3 | 3 | 3.0 | 184 | C. |
| September | 5 | 2 | 2.4 | 143 | C. |
| The period | | | | 5,920 | |

## SAN LUIS REY RIVER AT BONSALL, CAL.

LOCATION.—In the SW. ¼ SW. ¼ sec. 13, T. 10 S., R. 3 W., below concrete highway bridge at Bonsall, just below Moosa Canyon, about 14 miles below gaging station near Pala, and 14 miles above mouth of river.

RECORDS AVAILABLE.—April 16, 1912, to September 30, 1913.

DRAINAGE AREA.—465 square miles; measured on military survey and United States Geological Survey topographic maps.

GAGE.—Staff in three sections on right bank, 150 feet below bridge.

CHANNEL.—Sand, somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge above gage or by wading.

DIVERSIONS.—See San Luis Rey River near Pala. In addition, Morena ditch and Pala Indian Reservation canal divert water in the vicinity of Pala for irrigation. Water for irrigation is also pumped from wells along the river.

ACCURACY.—Rating curve fairly well defined; results good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Luis Rey River at Bonsall, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 19 | F. C. Ebert | 1.40 | 3.2 | Feb. 22 | F. C. Ebert | 1.60 | 41 |
| Jan. 16 | do | 1.75 | 97 | Mar. 12 | do | 1.40 | 31 |
| 17 | do | 1.63 | 62 | 15 | E. W. Case | 1.51 | 28 |
| 19 | do | 1.45 | 25 | 21 | F. C. Ebert | 1.44 | 21 |
| 24 | do | 1.35 | 9.1 | Apr. 8 | do | 1.39 | 12 |
| 25 | do | 1.39 | 11 | 19 | H. D. McGlashan | 1.35 | 9.6 |
| Feb. 14 | do | 1.42 | 12 | May 9 | F. C. Ebert | 1.20 | .3 |
| 20 | do | 1.40 | 9.8 | June 13 | do | 1.13 | *a* .2 |
| 21 | do | 1.43 | 15 | | | | |

*a* Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey River at Bonsall, Cal., for 1912–13.*

[Edward Stratton and Ernest Schlenz, observers.]

| Day. | Dec. | | Jan. | | Feb. | | Mar. | | Apr. | | May. | | June. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 1.4 | 3 | 1.4 | 14 | 1.9 | 157 | 1.4 | 14 | 1.2 | 0.3 | 1.2 | 0.3 |
| 2 | ..... | ..... | 1.45 | 8 | 1.35 | 10 | 1.85 | 140 | 1.4 | 14 | 1.2 | .3 | 1.2 | .3 |
| 3 | ..... | ..... | 1.45 | 8 | 1.4 | 14 | 1.55 | 40 | 1.4 | 14 | 1.2 | .3 | 1.2 | .3 |
| 4 | ..... | ..... | 1.45 | 8 | 1.35 | 10 | 1.5 | 33 | 1.4 | 14 | 1.1 | .1 | 1.15 | .2 |
| 5 | ..... | ..... | 1.4 | 3 | 1.4 | 14 | 1.5 | 36 | 1.4 | 14 | 1.1 | .1 | 1.15 | .2 |
| 6 | ..... | ..... | 1.5 | 14 | 1.4 | 14 | 1.5 | 39 | 1.4 | 14 | 1.15 | .2 | 1.15 | .2 |
| 7 | ..... | ..... | 1.5 | 14 | 1.5 | 30 | 1.45 | 30 | 1.4 | 14 | 1.2 | .3 | 1.15 | .2 |
| 8 | ..... | ..... | 1.5 | 14 | 1.55 | 42 | 1.4 | 23 | 1.4 | 14 | 1.2 | .3 | 1.15 | .2 |
| 9 | ..... | ..... | 1.5 | 14 | 1.6 | 53 | 1.4 | 25 | 1.4 | 14 | 1.2 | .3 | 1.15 | .2 |
| 10 | ..... | ..... | 1.55 | 27 | 1.55 | 32 | 1.4 | 27 | 1.3 | 14 | 1.2 | .3 | 1.15 | .2 |
| 11 | 1.25 | ..... | 1.5 | 14 | 1.45 | 16 | 1.35 | 22 | 1.3 | 13 | 1.2 | .3 | 1.15 | .2 |
| 12 | 1.4 | 3 | 1.55 | 27 | 1.4 | 10 | 1.35 | 23 | 1.25 | 13 | 1.2 | .3 | 1.1 | .1 |
| 13 | 1.4 | 3 | 1.55 | 27 | 1.4 | 10 | 1.35 | 17 | 1.2 | 12 | 1.2 | .3 | 1.05 | .1 |
| 14 | 1.4 | 3 | 1.55 | 27 | 1.4 | 10 | 1.4 | 16 | 1.2 | 12 | 1.2 | .3 | 1.05 | .1 |
| 15 | 1.4 | 3 | 1.5 | 14 | 1.4 | 10 | 1.4 | 14 | 1.1 | 12 | 1.2 | .3 | 1.0 | ..... |
| 16 | 1.4 | 3 | 1.7 | 77 | 1.35 | 6 | 1.45 | 22 | ..... | 11 | 1.2 | .3 | 1.0 | ..... |
| 17 | 1.4 | 3 | 1.6 | 53 | 1.4 | 10 | 1.45 | 22 | ..... | 11 | 1.2 | .3 | .9 | ..... |
| 18 | 1.4 | 3 | 1.6 | 53 | 1.4 | 10 | 1.45 | 22 | 1.2 | 10 | 1.2 | .3 | .95 | ..... |
| 19 | 1.4 | 3 | 1.5 | 30 | 1.4 | 10 | 1.45 | 22 | 1.4 | 10 | 1.2 | .3 | .9 | ..... |
| 20 | 1.4 | 3 | 1.5 | 30 | 1.4 | 10 | 1.4 | 14 | 1.4 | 9 | 1.2 | .3 | .85 | ..... |
| 21 | 1.4 | 3 | 1.4 | 14 | 1.45 | 16 | 1.45 | 22 | 1.35 | 9 | 1.2 | .3 | .85 | ..... |
| 22 | 1.3 | 1 | 1.4 | 14 | 1.8 | 105 | 1.45 | 22 | 1.35 | 8 | 1.2 | .3 | ..... | ..... |
| 23 | 1.4 | 3 | 1.4 | 14 | 1.7 | 70 | 1.45 | 22 | 1.35 | 8 | 1.2 | .3 | ..... | ..... |
| 24 | 1.4 | 3 | 1.4 | 14 | 1.65 | 56 | 1.45 | 22 | 1.35 | 7 | 1.2 | .3 | ..... | ..... |
| 25 | 1.4 | 3 | 1.4 | 14 | 1.7 | 70 | 1.6 | 53 | 1.35 | 6 | 1.2 | .3 | ..... | ..... |
| 26 | 1.4 | 3 | 1.4 | 14 | 2.0 | 195 | 1.6 | 53 | 1.2 | 5 | 1.2 | .3 | ..... | ..... |
| 27 | 1.4 | 3 | 1.4 | 14 | 1.9 | 150 | 1.6 | 53 | 1.2 | 4 | 1.2 | .3 | ..... | ..... |
| 28 | 1.4 | 3 | 1.35 | 10 | 1.9 | 154 | 1.6 | 53 | 1.2 | 3 | 1.2 | .3 | ..... | ..... |
| 29 | 1.4 | 3 | 1.4 | 14 | ..... | ..... | 1.5 | 30 | 1.2 | 2 | 1.2 | .3 | ..... | ..... |
| 30 | 1.4 | 3 | 1.4 | 14 | ..... | ..... | 1.5 | 30 | 1.2 | 1 | 1.15 | .2 | ..... | ..... |
| 31 | 1.4 | 3 | 1.4 | 14 | ..... | ..... | 1.4 | 14 | ..... | ..... | 1.15 | .2 | ..... | ..... |

NOTE.—Water began to flow freely Dec. 11, 1912. Apr. 10, 25, and May 5 observer reported river flowing in channel away from gage.

Daily discharge determined from fairly well defined rating curves applicable as follows: Dec. 11, 1912, to Jan. 16, 1913, practically same as used for period Apr. 19 to June 23, 1912; Jan. 17 to Feb. 9, Mar. 15 to Apr. 9, and May 1 to June 15; Feb. 10 to 26. Discharge determined by indirect methods for shifting channels Feb. 27 to Mar. 14. Discharge estimated by interpolation between measurements and study of observer's notes Apr. 10 to 30. Stream dry Oct. 1 to Dec. 10, 1912, and June 15 (about) to Sept. 30, 1913.

*Monthly discharge of San Luis Rey River at Bonsall, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 3 | 0 | 1.9 | 117 | D. |
| January | 77 | 3 | 19.8 | 1,220 | B. |
| February | 195 | 6 | 41.1 | 2,280 | B. |
| March | 157 | 14 | 36.1 | 2,220 | B. |
| April | 14 | 1 | 10.2 | 607 | C. |
| May | .3 | .1 | .28 | 17 | |
| June | .3 | 0 | .09 | 5 | |
| July | 0 | 0 | 0 | 0 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 195 | 0 | 5.93 | 6,500 | |

## SAN LUIS REY RIVER NEAR OCEANSIDE, CAL.

LOCATION.—In the SW. ¼ SW. ¼ sec. 13, T. 11 S., R. 5 W., opposite Oceanside pumping plant, just above ford, 1½ miles above mouth of river, and about 2 miles northeast of Oceanside.

RECORDS AVAILABLE.—April 17, 1912, to September 30, 1913.

DRAINAGE AREA.—563 square miles; measured on military survey and United States Geological Survey topograhpic maps.

GAGE.—Staff in three sections on right bank.

CHANNEL.—Sand and somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from concrete highway bridge three-fourths mile below gage or by wading.

DIVERSIONS.—Several small canals divert water for irrigation in Mission Valley, above the station. See also San Luis Rey River at Bonsall. Water is also pumped from wells at various points in the valley. Record at this station shows amount of water wasted into Pacific Ocean.

ACCURACY.—Rating curve fairly well defined; results good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co. through W. S. Post, engineer.

*Discharge measurements of San Luis Rey River near Oceanside, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 17 | F. C. Ebert | 2.05 | 7.2 | Mar. 12 | F. C. Ebert | 2.01 | 20 |
| 18 | do | 1.94 | 2.2 | 20 | do | 1.97 | 10 |
| Feb. 22 | do | 2.09 | 13 | 24 | W. S. Post | 2.14 | 31 |
| 23 | do | 2.32 | 104 | Apr. 8 | F. C. Ebert | 1.80 | 1.4 |
| 25 | W. S. Post | 2.23 | 67 | | | | |

*Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey River, near Oceanside, Cal., for 1912–13.*

[Alex. Peters, observer.]

| Day. | Feb. | | Mar. | | Apr. | | Day. | Feb. | | Mar. | | Apr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | 2.25 | 74 | 1.9 | 6 | 16 | | | 2.1 | 27 | | |
| 2 | | | 2.15 | 40 | 1.95 | 10 | 17 | | | 2.1 | 27 | | |
| 3 | | | 2.1 | 27 | 1.9 | 6 | 18 | | | 2.0 | 14 | | |
| 4 | | | 2.1 | 27 | 1.95 | 10 | 19 | | | 2.0 | 14 | | |
| 5 | | | 2.0 | 14 | 1.95 | 10 | 20 | | | 1.9 | 6 | | |
| 6 | | | 2.0 | 14 | 1.9 | 6 | 21 | | | 2.0 | 14 | | |
| 7 | | | 1.95 | 10 | 1.85 | 4 | 22 | 2.15 | 18 | 2.05 | 20 | | |
| 8 | | | 1.95 | 10 | 1.8 | 1 | 23 | 2.45 | 198 | 2.1 | 27 | | |
| 9 | | | 1.9 | 6 | 1.75 | 0.8 | 24 | 2.3 | 95 | 2.1 | 27 | | |
| 10 | | | 1.9 | 6 | 1.75 | .8 | 25 | 2.25 | 74 | 2.15 | 40 | | |
| 11 | | | 1.9 | 6 | 1.7 | .5 | 26 | 2.55 | 290 | 2.15 | 40 | | |
| 12 | | | 2.0 | 14 | 1.7 | .5 | 27 | 2.35 | 125 | 2.1 | 27 | | |
| 13 | | | 2.1 | 27 | | | 28 | 2.35 | 125 | 2.0 | 14 | | |
| 14 | | | 2.1 | 27 | | | 29 | | | 2.0 | 14 | | |
| 15 | | | 2.1 | 27 | | | 30 | | | 1.9 | 6 | | |
| | | | | | | | 31 | | | 1.9 | 6 | | |

NOTE.—Daily discharge determined from two well-defined rating curves applicable as follows: Feb. 22, same as for Apr. 17 to May 31, 1912; Feb. 23 to Apr. 12, 1913. Except on Jan. 17 and 18, 1913, river was dry for days for which gage height is not recorded.

*Monthly discharge of San Luis Rey River near Oceanside, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0.00 | 0 | |
| November | 0 | 0 | .00 | 0 | |
| December | 0 | 0 | .00 | 0 | |
| January | 0 | 0 | .3 | 18 | |
| February | 290 | 0 | 33.0 | 1,830 | B. |
| March | 74 | 6 | 21.0 | 1,290 | B. |
| April | 10 | 0 | 1.85 | 106 | D. |
| May | 0 | 0 | .00 | 0 | |
| June | 0 | 0 | .00 | 0 | |
| July | 0 | 0 | .00 | 0 | |
| August | 0 | 0 | .00 | 0 | |
| September | 0 | 0 | .00 | 0 | |
| The year | 290 | 0 | 4.50 | 3,250 | |

## AGUA CALIENTE CREEK NEAR WARNER SPRINGS, CAL.

LOCATION.—In the San Jose del Valle grant, about a mile northwest of Warner Springs.

RECORDS AVAILABLE.—Discharge measurements February 5 to September 30, 1913.

DRAINAGE AREA.—19.2 square miles; measured on topographic map.

GAGE.—Vertical staff driven in bed of stream.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Agua Caliente Creek near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

[Made by W. J. Isbell.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Feb. 5 | 1.23 | 0.2 | May 18 | 1.94 | 0.4 | Aug. 22 | 0.93 | 0.2 |
| 11 | 1.90 | .4 | 31 | 1.94 | .4 | 25 | .91 | .2 |
| 16 | 1.21 | .2 | June 10 | 1.95 | .4 | Sept. 2 | .77 | .2 |
| Mar. 16 | 1.18 | 5.7 | July 15 | 0.93 | .2 | 10 | .79 | .2 |
| Apr. 10 | 2.04 | 2.1 | 21 | .95 | .2 | 25 | .83 | .1 |

## WEST FORK OF SAN LUIS REY RIVER[1] NEAR WARNER SPRINGS, CAL.

LOCATION.—In the SW. ¼ sec. 15, T. 10 S., R. 2 E., in San Jose del Valle grant, about 2¾ miles above junction with San Luis Rey River, and 7½ miles northwest of Warner Springs.

RECORDS AVAILABLE.—March 26 to September 30, 1913.

DRAINAGE AREA.—25.6 square miles; measured on topographic map.

GAGE.—Sanders & Rising water-stage recorder on left bank, near mouth of canyon, with staff in two sections fastened to tree at same site.

CHANNEL.—Shifting sand. A concrete control has been built across channel just below gage.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

ACCURACY.—Discharge computed from fairly well defined rating curve and by indirect method for shifting channel. Results good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

[1] Local name Rincon Creek.

*Discharge measurements of West Fork of San Luis Rey River near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 25 | W. J. Isbell | 2.27 | 0.9 | May 18 | W. J. Isbell | 2.25 | 1.4 |
| Feb. 4 | do | 2.23 | .9 | 23 | do | 2.23 | 1.6 |
| 11 | do | 2.37 | 1.9 | 31 | do | 2.20 | 1.1 |
| 19 | F. C. Ebert | 2.29 | 1.3 | June 6 | do | 2.18 | .8 |
| Mar. 2 | W. J. Isbell | 2.46 | 11 | 12 | do | 2.17 | .6 |
| 16 | do | 2.49 | 11 | 14 | F. C. Ebert | 2.10 | .2 |
| 26 | do | 2.54 | 16 | 18 | W. J. Isbell | 2.12 | .2 |
| Apr. 10 | do | 2.42 | 5.7 | 25 | do | 2.12 | .2 |
| 17 | do | 2.38 | 4.6 | July 1 | do | 2.08 | *a*.02 |
| 23 | do | 2.40 | 4.1 | 9 | R. W. Day | 2.08 | *a*.03 |
| 23 | do | 2.48 | 10 | Sept. 18 | W. J. Isbell | ..... | Dry. |
| May 1 | do | 2.38 | 3 | 29 | do | ..... | Dry. |
| 10 | F. C. Ebert | 2.33 | 2.3 | | | | |

*a* Estimated.

*Daily gage height, in feet, and discharge, in second-feet, of West Fork of San Luis Rey River near Warner Springs, Cal., for the year ending Sept. 30, 1913.*

| Day. | Mar. | | Apr. | | May. | | June. | | July. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | 2.5 | 12 | 2.4 | 3 | 2.2 | 1.0 | 2.1 | 0.2 |
| 2 | | | 2.5 | 12 | 2.35 | 3 | 2.2 | 1 | 2.1 | .2 |
| 3 | | | 2.5 | 12 | 2.35 | 3 | 2.2 | 1 | 2.1 | .2 |
| 4 | | | 2.45 | 7.5 | 2.35 | 3 | 2.15 | .5 | 2.1 | .2 |
| 5 | | | 2.45 | 7.5 | 2.35 | 2.5 | 2.2 | 1 | 2.1 | .2 |
| 6 | | | 2.45 | 7.5 | 2.35 | 2.5 | 2.15 | .5 | 2.1 | .2 |
| 7 | | | 2.45 | 7.5 | 2.35 | 2.5 | 2.1 | .2 | 2.1 | .2 |
| 8 | | | 2.45 | 7.5 | 2.35 | 2.5 | 2.1 | .2 | 2.1 | .2 |
| 9 | | | 2.4 | 5 | 2.35 | 2.5 | 2.15 | .5 | 2.1 | .2 |
| 10 | | | 2.4 | 5 | 2.35 | 2.5 | 2.15 | .5 | 2.1 | .2 |
| 11 | | | 2.4 | 5 | 2.3 | 2.5 | 2.15 | .5 | 2.1 | .2 |
| 12 | | | 2.4 | 5 | 2.3 | 2.5 | 2.15 | .5 | 2.1 | .2 |
| 13 | | | 2.4 | 5 | 2.3 | 2 | 2.15 | .5 | 2.1 | .2 |
| 14 | | | 2.4 | 5 | 2.3 | 2 | 2.1 | .2 | 2.05 | .1 |
| 12 | | | 2.4 | 5 | 2.25 | 2 | 2.1 | .2 | 2.05 | .1 |
| 16 | | | 2.4 | 5 | 2.25 | 2 | 2.1 | .2 | 2.1 | .2 |
| 17 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 2.1 | .2 |
| 18 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 2.1 | .2 |
| 19 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 2.05 | .1 |
| 20 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 2.05 | .1 |
| 21 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 2.05 | .1 |
| 22 | | | 2.4 | 5 | 2.25 | 1.5 | 2.1 | .2 | 1.95 | ..... |
| 23 | | | 2.4 | 7 | 2.25 | 1.5 | 2.1 | .2 | ..... | ..... |
| 24 | | | 2.4 | 6.5 | 2.25 | 1.5 | 2.1 | .2 | ..... | ..... |
| 25 | | | 2.4 | 6 | 2.2 | 1 | 2.1 | .2 | ..... | ..... |
| 26 | 2.55 | 17 | 2.4 | 5.5 | 2.2 | 1 | 2.1 | .2 | ..... | ..... |
| 27 | 2.55 | 17 | 2.4 | 5 | 2.2 | 1 | 2.2 | .2 | ..... | ..... |
| 28 | 2.5 | 12 | 2.4 | 4.5 | 2.2 | 1 | 2.2 | .2 | ..... | ..... |
| 29 | 2.5 | 12 | 2.4 | 4 | 2.2 | 1 | 2.1 | .2 | ..... | ..... |
| 30 | 2.5 | 12 | 2.4 | 3.5 | 2.2 | 1 | 2.1 | .2 | ..... | ..... |
| 31 | 2.5 | 12 | ..... | ..... | 2.2 | 1 | ..... | ..... | ..... | ..... |

NOTE.—River dry July 23 to Sept. 30. Discharge determined as follows: Mar. 26 to Apr. 22 and May 18 to July 22, from a fairly well defined curve, Apr. 23 to May 17 by indirect method for shifting channels to cover slight filling in of gage well and intake ditch by caving banks due to seepage.

*Monthly discharge of West Fork of San Luis Rey River near Warner Springs, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| March 26–31 | 17 | 12 | 13.7 | 16 | A. |
| April | 12 | 3.5 | 6.18 | 368 | A. |
| May | 3 | 1 | 1.90 | 117 | A. |
| June | 1 | .2 | .38 | 23 | B. |
| July | .2 | .0 | .12 | 7 | B. |
| August | .0 | .0 | .00 | 0 | |
| September | .0 | .0 | .00 | 0 | |
| The period | | | | 531 | |

## CARRIZO CREEK NEAR WARNER SPRINGS, CAL.

LOCATION.—At mouth of canyon, near southern boundary of Valle de San Jose grant, and about 7½ miles southwest of Warner Springs.

RECORDS AVAILABLE.—Discharge measurements January 24 to September 30, 1913.

DRAINAGE AREA.—4.9 square miles; measured on topographic map.

GAGE.—Staff-in two sections fastened to cottonwood tree on right bank.

CHANNEL.—Shifting sand. On June 16, 1913, a timber control was installed.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Carrizo Creek near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 24 | W. J. Isbell | 0.91 | 0.3 | May 22 | W. J. Isbell | 0.87 | 0.2 |
| 30 | do | .90 | .4 | 30 | do | .87 | .2 |
| Feb. 14 | F. C. Ebert | .90 | .4 | June 5 | do | .86 | .2 |
| 19 | W. J. Isbell | .95 | .4 | 9 | do | .90 | .2 |
| 25 | do | 1.05 | 3.8 | 14 | F. C. Ebert | .93 | .4 |
| Mar. 13 | do | .99 | 1.0 | 20 | W. J. Isbell | 2.47 | 0 |
| 21 | do | .94 | .6 | 27 | do | 2.51 | .4 |
| 29 | do | .95 | .7 | July 23 | do | 2.51 | .2 |
| Apr. 2 | do | .94 | .8 | 26 | do | 2.52 | .2 |
| 11 | do | .93 | .4 | Aug. 19 | F. C. Ebert | 2.53 | *a* .2 |
| 18 | do | .93 | .4 | Sept. 2 | W. J. Isbell | 2.54 | .3 |
| 22 | do | .92 | .6 | 9 | do | 2.54 | .2 |
| May 6 | do | .91 | .6 | 22 | do | 2.58 | .2 |
| 10 | F. C. Ebert | .86 | .3 | 23 | do | 2.58 | .1 |
| 16 | W. J. Isbell | .85 | .2 | 29 | do | 2.57 | .2 |

*a* Estimated.

NOTE.—Timber control installed June 16, 1913, which changed the discharge relation.

## SUSANNA CREEK NEAR WARNER SPRINGS, CAL.

LOCATION.—At mouth of canyon, near southern boundary of Valle de San Jose grant and about 7½ miles southwest of Warner Springs.

RECORDS AVAILABLE.—Discharge measurements February 1 to September 30, 1913.

DRAINAGE AREA.—4.6 square miles; measured on topographic map.

GAGE.—Staff bolted to upstream side of left bridge abutment.

CHANNEL.—Shifting sand. July 14, 1913, a plank was placed horizontally between bridge abutments for a control.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Susanna Creek near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 1 | W. J. Isbell | 0.90 | 0.6 | May 16 | W. J. Isbell | 0.94 | 0.6 |
| 26 | do | 1.29 | 2.3 | 22 | do | .91 | .5 |
| Mar. 13 | do | 1.30 | 2.8 | 30 | do | .90 | .4 |
| 21 | do | 1.22 | 2.0 | June 5 | do | .86 | .3 |
| 24 | do | 1.24 | 2.6 | 9 | do | .85 | .2 |
| Apr. 2 | do | 1.23 | 2.6 | 14 | F. C. Ebert | .87 | .4 |
| 11 | do | 1.16 | 1.5 | 20 | W. J. Isbell | .05 | .1 |
| 18 | do | 1.15 | 2.3 | 27 | do | .16 | .4 |
| 22 | do | 1.12 | 1.3 | Aug. 29 | F. C. Ebert | ..... | Dry. |
| May 6 | do | 1.05 | .9 | Sept. 23 | W. J. Isbell | ..... | Dry. |
| 10 | F. C. Ebert | 1.03 | .8 | 29 | do | ..... | Dry. |

## MATAGUAL CREEK NEAR WARNER SPRINGS, CAL.

LOCATION.—In the SE. ¼ sec. 28, T. 11 S., R. 3 E., in Valle de San Jose grant, near mouth of canyon, and about 5 miles southwest of Warner Springs.

RECORDS AVAILABLE.—Discharge measurements November 16, 1912, to September 30, 1913.

DRAINAGE AREA.—9.2 square miles; measured on topographic map.

GAGE.—Depth of water is measured over a reference point in pool above artificial control

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of Matagual Creek near Warner Springs, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 16 | W. J. Isbell | 0.27 | 0.7 | Apr. 29 | W. J. Isbell | 0.32 | 1.3 |
| Dec. 7 | do | .31 | .9 | May 6 | do | .32 | 1.2 |
| 14 | do | .31 | .8 | 10 | F. C. Ebert | .30 | 1.0 |
| 18 | F. C. Ebert | .30 | .9 | 16 | W. J. Isbell | .26 | .9 |
| 21 | W. J. Isbell | .29 | .9 | 22 | do | .25 | .8 |
| 28 | do | .29 | .8 | 30 | do | .23 | .8 |
| Jan. 3 | do | .29 | .9 | June 5 | do | .23 | .8 |
| 9 | do | .31 | .9 | 9 | do | .25 | .8 |
| 14 | do | .31 | 1.0 | 14 | F. C. Ebert | .25 | .8 |
| 19 | do | .38 | 1.2 | 20 | W. J. Isbell | .20 | .4 |
| 24 | do | .33 | 1.0 | 27 | do | .27 | .8 |
| Feb. 1 | do | .33 | 1.0 | July 2 | do | .18 | .3 |
| 8 | do | .30 | 1.1 | 18 | do | .13 | .2 |
| 14 | do | .33 | 1.0 | 23 | do | .16 | .2 |
| 19 | F. C. Ebert | .34 | 1.1 | 26 | do | .18 | .4 |
| 26 | W. J. Isbell | .52 | 2.6 | Aug. 21 | do | .17 | .2 |
| Mar. 13 | do | .44 | 1.6 | 24 | do | .15 | .2 |
| 21 | do | .41 | 1.6 | Sept. 1 | do | .18 | .4 |
| 21 | do | .42 | 1.7 | 9 | do | .17 | .3 |
| Apr. 2 | do | .41 | 1.7 | 23 | do | .16 | .3 |
| 11 | do | .35 | 1.2 | 29 | do | .17 | .4 |

## ESCONDIDO MUTUAL WATER CO.'S CANAL NEAR NELLIE, CAL.

LOCATION.—In the SW. ¼ NW. ¼ sec. 33, T. 10 S., R. 1 E., about 3½ miles above Rincon Indian Reservation, 15 miles northeast of Escondido, and 5 miles southwest of Nellie.

RECORDS AVAILABLE.—March 1, 1905, to September 30, 1913.

DISCHARGE.—Measured by 6-foot weir 500 feet below intake.

COOPERATION.—Record furnished by Escondido Mutual Water Co., through A. W. Wohlford, president.

The canal, which is 5.6 miles long, consists of flume, ditch, and tunnel sections constructed through a very rough, mountainous country. It discharges into a reservoir about 6 miles northeast of Escondido. The dam, which is 76 feet high and 380 feet long, is of the usual rock-fill type, with a facing of redwood planks. The reservoir (capacity 3,120 acre-feet) supplies water for irrigation and domestic uses at Escondido and vicinity.

*Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.4 | 4.5 | 8.1 | 31.9 | 27.9 | 3.1 | 16 | 3.1 | ..... | 8.9 | 30.5 | 18.1 | ..... |
| 2 | 4.9 | 4.5 | 8.1 | 30.5 | 33.2 | 2.3 | 17 | 3.1 | ..... | 8.9 | 29.6 | 18.1 | ..... |
| 3 | 4.5 | ..... | 8.1 | 29.6 | 27.9 | 2.3 | 18 | 3.1 | ..... | 8.9 | 29.6 | ..... | ..... |
| 4 | 3.5 | ..... | 8.1 | 33.3 | 25.3 | 2.3 | 19 | 3.1 | 18.1 | 8.9 | 29.6 | 26.0 | ..... |
| 5 | 2.8 | ..... | 15.9 | 33.3 | 23.4 | ..... | 20 | 3.1 | 14.8 | 10.8 | 36.1 | 19.3 | ..... |
| 6 | 2.6 | ..... | 19.8 | 33.3 | 22.8 | ..... | 21 | 4.5 | 11.8 | 10.4 | 30.5 | 15.9 | ..... |
| 7 | 2.6 | ..... | 20.4 | 33.3 | 21.6 | ..... | 22 | 4.5 | 11.8 | 26.0 | 30.5 | 15.9 | ..... |
| 8 | 2.8 | ..... | 26.6 | 33.3 | 20.4 | ..... | 23 | 4.5 | 11.8 | 18.2 | 36.1 | 13.8 | ..... |
| 9 | 2.8 | ..... | 21.6 | 33.3 | 18.7 | ..... | 24 | 4.5 | 10.8 | 27.9 | 36.1 | 12.8 | ..... |
| 10 | 2.8 | ..... | 16.4 | 30.6 | 17.2 | ..... | 25 | 4.5 | 10.3 | ..... | 34.6 | 12.3 | ..... |
| 11 | 3.1 | ..... | 13.8 | 30.6 | 13.8 | ..... | 26 | 4.5 | 8.4 | ..... | 34.6 | 10.3 | ..... |
| 12 | 3.1 | ..... | 11.8 | 34.6 | 13.8 | ..... | 27 | 4.5 | 8.9 | ..... | 34.6 | 9.9 | ..... |
| 13 | 3.1 | ..... | 10.3 | 34.6 | 13.8 | ..... | 28 | 4.5 | 8.1 | 29.6 | 33.2 | 8.1 | ..... |
| 14 | 3.1 | ..... | 9.9 | 31.9 | 21.6 | ..... | 29 | 4.5 | 8.1 | ..... | 33.2 | 8.1 | ..... |
| 15 | 3.1 | ..... | 9.4 | 30.5 | 18.1 | ..... | 30 | 4.5 | 8.1 | ..... | 30.5 | 8.1 | ..... |
| | | | | | | | 31 | 4.5 | 8.1 | ..... | 30.5 | ..... | ..... |

NOTE.—Canal was dry on days for which discharge is not recorded. Apr. 18, break in canal.

*Monthly discharge of Escondido Mutual Water Co.'s canal near Nellie, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | ..... | ..... | 0.00 | 0 |
| November | ..... | ..... | .00 | 0 |
| December | 6.4 | 2.6 | 3.75 | 231 |
| January | 18.1 | .0 | 4.78 | 294 |
| February | 29.6 | .0 | 13.1 | 728 |
| March | 36.1 | 29.6 | 32.4 | 1,990 |
| April | 33.2 | .0 | 17.2 | 1,020 |
| May | 3.1 | .0 | .32 | 20 |
| June | ..... | ..... | .00 | 0 |
| July | ..... | ..... | .00 | 0 |
| August | ..... | ..... | .00 | 0 |
| September | ..... | ..... | .00 | 0 |
| The year | 36.1 | .0 | 5.92 | 4,280 |

NOTE.—Discharge computed by engineers of United States Geological Survey from daily record furnished by Escondido Mutual Water Co.

## PALA INDIAN RESERVATION CANAL AT PALA, CAL.

LOCATION.—In the NW. ¼ SE. ¼ sec. 26, T. 9 S., R. 2 W., at sand box, 300 feet above highway bridge, half a mile southeast of Pala.

RECORDS AVAILABLE.—June 17, 1912, to September 30, 1913 (incomplete).

GAGE.—Vertical staff in sand box, showing head on steel plate at outlet. New gage reading 0.04 foot lower than old gage installed in September, 1912.

DISCHARGE MEASUREMENTS.—Made from foot plank across concrete-lined canal below sand box.

ACCURACY.—Rating curve is well defined, results are good.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co. and United States Indian Service.

*Discharge measurements of Pala Indian Reservation canal at Pala, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height, old gage. | Gage height, new gage. | Discharge. | Date. | Made by— | Gage height, old gage. | Gage height, new gage. | Discharge. |
|---|---|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Dec. 18 | F. C. Ebert | 0.60 | 0.56 | 5.7 | June 13 | F. C. Ebert | ..... | .56 | 5.7 |
| Jan. 19 | do | .27 | .23 | 1.6 | 25 | R. W. Day | ..... | .32 | 2.2 |
| May 9 | do | ..... | .22 | 1.6 | Aug. 31 | F. C. Ebert | ..... | .38 | 3.3 |

*Daily gage height, in feet, of Pala Indian Reservation canal at Pala, Cal., for the year ending Sept. 30, 1913.*

[Allen Bowdish, observer.]

| Day. | Oct. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | ..... | ..... | ..... | ..... | 0.50 | ..... | 0.30 | 0.35 | ..... |
| 2 | ..... | ..... | ..... | 0.40 | ..... | ..... | .50 | ..... | .30 | .35 | 0.30 |
| 3 | ..... | ..... | ..... | ..... | ..... | ..... | .40 | 0.55 | .32 | .32 | .30 |
| 4 | ..... | ..... | ..... | ..... | ..... | 0.20 | .50 | .55 | ..... | .37 | .30 |
| 5 | ..... | ..... | ..... | ..... | 0.10 | .20 | .50 | .50 | ..... | .37 | .30 |
| 6 | ..... | ..... | ..... | .50 | .10 | ..... | .50 | .55 | ..... | .37 | .30 |
| 7 | ..... | ..... | ..... | ..... | .60 | .55 | ..... | .55 | .30 | .37 | .30 |
| 8 | ..... | ..... | ..... | ..... | .60 | .50 | ..... | .55 | .30 | .37 | .30 |
| 9 | ..... | ..... | ..... | ..... | .60 | .50 | .22 | .55 | .30 | .37 | ..... |
| 10 | ..... | ..... | ..... | ..... | .50 | .50 | ..... | .50 | .30 | .35 | .30 |
| 11 | ..... | ..... | ..... | ..... | .40 | .50 | ..... | .55 | .30 | .37 | .30 |
| 12 | ..... | ..... | ..... | ..... | ..... | .45 | ..... | .55 | .30 | .35 | .30 |
| 13 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .53 | .25 | .35 | .33 |
| 14 | ..... | ..... | ..... | .30 | ..... | ..... | ..... | ..... | .30 | .35 | .25 |
| 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .50 | .30 | .35 | .25 |
| 16 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .50 | .25 | .35 | .30 |
| 17 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .50 | .30 | .35 | .30 |
| 18 | ..... | 0.56 | ..... | ..... | ..... | ..... | ..... | .55 | .40 | ..... | .30 |
| 19 | ..... | ..... | 0.23 | ..... | .30 | ..... | ..... | .52 | .37 | ..... | .30 |
| 20 | ..... | ..... | ..... | ..... | ..... | .60 | ..... | .52 | .40 | .30 | ..... |
| 21 | ..... | ..... | ..... | ..... | ..... | .60 | ..... | .55 | .37 | .30 | .30 |
| 22 | ..... | ..... | ..... | ..... | ..... | .60 | ..... | .55 | .40 | .30 | .32 |
| 23 | ..... | ..... | ..... | ..... | ..... | .60 | .55 | .55 | .37 | .30 | .33 |
| 24 | ..... | ..... | ..... | .15 | ..... | .60 | .55 | .50 | .30 | .30 | .40 |
| 25 | ..... | ..... | ..... | .15 | ..... | .60 | ..... | .40 | .37 | .30 | .40 |
| 26 | ..... | ..... | ..... | ..... | ..... | .60 | .55 | .40 | .37 | .30 | .35 |
| 27 | ..... | ..... | ..... | ..... | ..... | ..... | .55 | .40 | .34 | .30 | .34 |
| 28 | ..... | ..... | 0.40 | ..... | ..... | ..... | .52 | .40 | .35 | .25 | .40 |
| 29 | ..... | ..... | ..... | ..... | ..... | ..... | .55 | .40 | .35 | .30 | .35 |
| 30 | 0.38 | ..... | ..... | ..... | ..... | ..... | .50 | .40 | .35 | .34 | ..... |
| 31 | ..... | ..... | ..... | ..... | ..... | ..... | .50 | ..... | .35 | .38 | ..... |

*Daily discharge, in second-feet, of Pala Indian Reservation Canal at Pala, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 0 | 0 | 4.8 | 0 | 2.4 | 3.0 | |
| 2 | | | | 3.6 | 0 | 0 | 4.8 | 0 | 2.4 | 3.0 | 2.4 |
| 3 | | | | | 0 | 0 | 3.6 | 5.5 | 2.6 | 2.6 | 2.4 |
| 4 | | | | | 0 | 1.4 | 4.8 | 5.5 | | 3.2 | 2.4 |
| 5 | | | | | .6 | 1.4 | 4.8 | 4.8 | | 3.2 | 2.4 |
| 6 | | | | 4.8 | .6 | 0 | 4.8 | 5.5 | | 3.2 | 2.4 |
| 7 | | | | | 6.2 | 5.5 | | 5.5 | 2.4 | 3.2 | 2.4 |
| 8 | | | | | 6.2 | 4.8 | | 5.5 | 2.4 | 3.2 | 2.4 |
| 9 | | | | | 6.2 | 4.8 | 1.6 | 5.5 | 2.4 | 3.2 | |
| 10 | | | | | 4.8 | 4.8 | | 4.8 | 2.4 | 3.0 | 2.4 |
| 11 | | | | | 3.6 | 4.8 | | 5.5 | 2.4 | 3.2 | 2.4 |
| 12 | | | | | 0 | 4.2 | | 5.5 | 2.4 | 3.0 | 2.4 |
| 13 | | | | | 0 | | | 5.2 | 1.8 | 3.0 | 2.7 |
| 14 | | | | 2.4 | 0 | | | | 2.4 | 3.0 | 1.8 |
| 15 | | | | | 0 | | | 4.8 | 2.4 | 3.0 | 1.8 |
| 16 | | | | | 0 | | | 4.8 | 1.8 | 3.0 | 2.4 |
| 17 | | | | | 0 | | | 4.8 | 2.4 | 3.0 | 2.4 |
| 18 | | 5.6 | | | 0 | | | 5.5 | 3.6 | | 2.4 |
| 19 | | | 1.6 | | 2.4 | | | 5.1 | 3.2 | | 2.4 |
| 20 | | | | 0 | 0 | 6.2 | | 5.1 | 3.6 | 2.4 | |
| 21 | | | | 0 | 0 | 6.2 | | 5.5 | 3.2 | 2.4 | 2.4 |
| 22 | | | 0 | 0 | 0 | 6.2 | | 5.5 | 3.6 | 2.4 | 2.6 |
| 23 | | | | 0 | 0 | 6.2 | 5.5 | 5.5 | 3.2 | 2.4 | 2.7 |
| 24 | | | | 1.0 | 0 | 6.2 | 5.5 | 4.8 | 2.4 | 2.4 | 3.6 |
| 25 | | | | 1.0 | 0 | 6.2 | | 3.6 | 3.2 | 2.4 | 3.6 |
| 26 | | | | 0 | 0 | 6.2 | 5.5 | 3.6 | 3.2 | 2.4 | 3.0 |
| 27 | | | | 0 | 0 | | 5.5 | 3.6 | 2.8 | 2.4 | 2.8 |
| 28 | | | 3.6 | 0 | 0 | | 5.1 | 3.6 | 3.0 | 1.8 | 3.6 |
| 29 | | | | | 0 | | 5.5 | 3.6 | 3.0 | 2.4 | 3.0 |
| 30 | 3.3 | | | | 0 | | 4.8 | 3.6 | 3.0 | 2.8 | 0 |
| 31 | | | | | 0 | | 4.8 | | 3.0 | 3.3 | |

NOTE.—Daily discharge determined from a well-defined rating curve. No information regarding flow during periods for which discharge is not recorded except that given in table.

## SAN LUIS REY DITCH NEAR SAN LUIS REY, CAL.

LOCATION.—In the SW. ¼ NW. ¼ sec. 3, T. 11 S., R. 4 W., about 2 miles northeast of San Luis Rey, about 8 miles northeast of Oceanside.

RECORDS AVAILABLE.—April 8 to 19, 1913.

GAGE.—Vertical staff on left bank half a mile below intake.

CHANNEL.—Sand and silt.

DISCHARGE MEASUREMENTS.—Made from bridge 400 feet above gage or by wading.

ACCURACY.—Results approximate.

COOPERATION.—Station maintained in cooperation with Volcan Land & Water Co., through W. S. Post, engineer.

*Discharge measurements of San Luis Rey ditch near San Luis Rey, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Apr. 8 | F. C. Ebert | 0.83 | 11 |
| 19 | H. D. McGlashan | .27 | 2.5 |

*Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey ditch near San Luis Rey, Cal., for the period April 8–19, 1913.*

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| Apr. 8 | 0.77 | 9.7 | Apr. 14 | 0.66 | 7.5 |
| 9 | .62 | 6.8 | 15 | .90 | 12.7 |
| 10 | .48 | 4.7 | 16 | .42 | 4.0 |
| 11 | .40 | 3.7 | 17 | .23 | 2.2 |
| 12 | .29 | 2.6 | 18 | .59 | 6.4 |
| 13 | .31 | 2.8 | 19 | .42 | 4.0 |

NOTE.—Daily discharge determined from a poorly defined rating curve.

## SANTA ANA RIVER BASIN.

### SANTA ANA RIVER NEAR MENTONE, CAL.

LOCATION.—In the SW. ¼ SW. ¼ sec. 34, T. 1 N., R. 2 W., just above road crossing opposite Warm Springs Canyon, three-fourths of a mile below intake of Pacific Light & Power Co.'s canal, about 2 miles above mouth of canyon, and 5 miles northeast of Mentone.

RECORDS AVAILABLE.—July 1, 1896, to September 30, 1913.

DRAINAGE AREA.—182 square miles.

GAGE.—Vertical staff on right bank about 100 feet above ford installed February 25, 1910; before this date various gages were used. Original datum not maintained.

CHANNEL.—Gravel and bowlders; will shift during high water.

DISCHARGE MEASUREMENTS.—Made from cable just below gage or by wading.

DIVERSIONS.—Southern California Edison Co.'s power plants Nos. 1 and 2 are located 5¼ and 2¾ miles, respectively, above the Mentone plant at the mouth of the canyon. The intake of the Pacific Light & Power Co.'s canal is at plant No. 2. The tailrace from this plant discharges into the canal. The Greenspot pipe line diverts water from the forebay at the Mentone power house. Water is stored on Bear Creek at Bear Valley reservoir.

ACCURACY.—Results good.

*Discharge measurements of Santa Ana River near Mentone, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 23 | F. C. Ebert | 2.43 | 1.7 | Mar. 4 | W. H. Spear | 2.48 | 2.5 |
| Jan. 15 | do | 2.42 | 1.1 | Apr. 23 | H. D. McGlashan | 2.44 | 1.6 |
| Mar. 4 | do | 2.48 | 2.3 | July 12 | F. C. Ebert | 2.40 | 1.2 |

*Daily gage height, in feet, of Santa Ana River near Mentone, Cal., for the year ending Sept. 30, 1913.*

[A. W. Henn, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 6 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 7 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 8 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 |
| 9 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 10 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 11 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 12 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 13 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 14 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.4 | 2.4 | 2.4 | 2.4 |
| 15 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 | 2.35 |
| 16 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 | 2.35 |
| 17 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 2.4 | 2.4 | 2.35 |
| 18 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.4 | 2.4 | 2.35 |
| 19 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.35 | 2.4 | 2.35 |
| 20 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.4 | 2.4 | 2.35 |
| 21 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.35 | 2.4 | 2.35 |
| 22 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.35 | 2.4 | 2.35 |
| 23 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.4 | 2.4 | 2.35 |
| 24 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.45 | 2.45 | 2.4 | 3.4 | 2.4 | 2.35 |
| 25 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.4 | 2.45 | 2.45 | 2.4 | 3.4 | 2.4 | 2.35 |
| 26 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.4 | 2.45 | 2.45 | 2.4 | 3.25 | 2.4 | 2.35 |
| 27 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.4 | 2.45 | 2.45 | 2.4 | 2.45 | 2.4 | 2.45 |
| 28 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.45 | 2.45 | 2.4 | 2.45 | 2.4 | 2.35 |
| 29 | 2.4 | 2.4 | 2.4 | 2.4 | ..... | 2.4 | 2.45 | 2.45 | 2.4 | 2.45 | 2.4 | 2.35 |
| 30 | 2.4 | 2.4 | 2.4 | 2.4 | ..... | 2.4 | 2.45 | 2.45 | 2.4 | 2.45 | 2.4 | 2.35 |
| 31 | 2.4 | ..... | 2.4 | 2.4 | ..... | 2.4 | ..... | 2.45 | ..... | 2.4 | 2.4 | ..... |

*Daily discharge, in second-feet, of Santa Ana River near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 5 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 6 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 7 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 8 | 1.2 | 1.2 | 1.2 | 1.2 | 4.5 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 |
| 9 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 10 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 11 | 1.2 | 2.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 12 | 1.2 | 2.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 13 | 1.2 | 2.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 14 | 1.2 | 2.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 |
| 15 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 | .9 |
| 16 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 | .9 |
| 17 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 1.2 | 1.2 | .9 |
| 18 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 89 | 1.2 | .9 |
| 19 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 80 | 1.2 | .9 |
| 20 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 89 | 1.2 | .9 |
| 21 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 80 | 1.2 | .9 |
| 22 | 1.2 | 1.2 | 1.2 | 1.3 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 80 | 1.2 | .9 |
| 23 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 89 | 1.2 | .9 |
| 24 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.2 | 89 | 1.2 | .9 |
| 25 | 1.2 | 1.2 | 1.2 | 1.2 | 4.5 | 1.2 | 1.8 | 1.8 | 1.2 | 89 | 1.2 | .9 |
| 26 | 1.2 | 1.2 | 1.2 | 1.2 | 4.5 | 1.2 | 1.8 | 1.8 | 1.2 | 63 | 1.2 | .9 |
| 27 | 1.2 | 1.2 | 1.2 | 1.2 | 4.5 | 1.2 | 1.8 | 1.8 | 1.2 | 1.8 | 1.2 | .9 |
| 28 | 1.2 | 1.2 | 1.2 | 1.2 | 2.4 | 1.2 | 1.8 | 1.8 | 1.2 | 1.8 | 1.2 | .9 |
| 29 | 1.2 | 1.2 | 1.2 | 1.2 | ..... | 1.2 | 1.8 | 1.8 | 1.2 | 1.8 | 1.2 | .9 |
| 30 | 1.2 | 1.2 | 1.2 | 1.2 | ..... | 1.2 | 1.8 | 1.8 | 1.2 | 1.8 | 1.2 | .9 |
| 31 | 1.2 | ..... | 1.2 | 1.2 | ..... | 1.2 | ..... | 1.8 | ..... | 1.2 | 1.2 | ..... |

NOTE.—Daily discharge determined from a well-defined rating curve.

*Monthly discharge of Santa Ana River near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 1.2 | 1.2 | 1.20 | 74 | C. |
| November | 2.4 | 1.2 | 1.36 | 81 | C. |
| December | 1.2 | 1.2 | 1.20 | 74 | C. |
| January | 2.4 | 1.2 | 1.32 | 81 | C. |
| February | 4.5 | 1.2 | 1.71 | 95 | C. |
| March | 2.4 | 1.2 | 1.35 | 83 | C. |
| April | 1.8 | 1.2 | 1.52 | 90 | B. |
| May | 1.8 | 1.8 | 1.80 | 111 | B. |
| June | 1.8 | 1.2 | 1.36 | 81 | B. |
| July | 89 | 1.2 | 25.1 | 1,540 | B. |
| August | 1.2 | 1.2 | 1.20 | 74 | B. |
| September | 1.2 | .9 | 1.04 | 62 | B. |
| The year | 89 | .9 | 3.38 | 2,450 | |

*Combined daily discharge, in second-feet, of Santa Ana River and Pacific Light & Power Co.'s canal, including Bear Valley Greenspot pipe line near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 57 | 46 | 45 | 36 | 37 | 50 | 72 | 51 | 59 | 59 | 56 | 57 |
| 2 | 60 | 34 | 36 | 36 | 35 | 49 | 75 | 59 | 57 | 61 | 59 | 54 |
| 3 | 62 | 44 | 33 | 37 | 35 | 50 | 69 | 59 | 56 | 62 | 61 | 56 |
| 4 | 53 | 39 | 36 | 37 | 35 | 54 | 64 | 59 | 59 | 62 | 66 | 59 |
| 5 | 57 | 39 | 36 | 30 | 37 | 55 | 71 | 58 | 54 | 60 | 64 | 61 |
| 6 | 49 | 37 | 31 | 16 | 40 | 55 | 71 | 58 | 62 | 64 | 66 | 63 |
| 7 | 45 | 39 | 31 | 17 | 41 | 58 | 68 | 62 | 62 | 64 | 59 | 65 |
| 8 | 44 | 37 | 33 | 25 | 65 | 55 | 66 | 66 | 57 | 66 | 68 | 59 |
| 9 | 48 | 34 | 33 | 29 | 48 | 53 | 68 | 64 | 58 | 64 | 66 | 59 |
| 10 | 48 | 37 | 38 | 32 | 42 | 53 | 67 | 61 | 56 | 60 | 62 | 59 |
| 11 | 48 | 50 | 38 | 32 | 42 | 52 | 64 | 61 | 59 | 60 | 59 | 60 |
| 12 | 52 | 40 | 41 | 32 | 41 | 52 | 64 | 63 | 54 | 56 | 59 | 60 |
| 13 | 52 | 40 | 41 | 31 | 41 | 52 | 64 | 63 | 52 | 52 | 59 | 60 |
| 14 | 55 | 35 | 41 | 31 | 38 | 49 | 65 | 60 | 49 | 30 | 57 | 64 |
| 15 | 60 | 34 | 41 | 33 | 38 | 49 | 59 | 60 | 57 | 60 | 60 | 57 |
| 16 | 60 | 37 | 41 | 50 | 38 | 46 | 56 | 62 | 53 | 62 | 60 | 57 |
| 17 | 58 | 34 | 41 | 43 | 38 | 46 | 56 | 60 | 58 | 54 | 60 | 57 |
| 18 | 58 | 34 | 36 | 42 | 38 | 52 | 60 | 59 | 56 | 89 | 58 | 64 |
| 19 | 55 | 34 | 41 | 38 | 36 | 49 | 56 | 66 | 58 | 80 | 62 | 62 |
| 20 | 51 | 37 | 36 | 38 | 38 | 57 | 56 | 59 | 61 | 89 | 63 | 60 |
| 21 | 49 | 39 | 33 | 36 | 38 | 54 | 51 | 60 | 61 | 80 | 61 | 62 |
| 22 | 53 | 39 | 36 | 36 | 41 | 52 | 54 | 55 | 63 | 80 | 54 | 62 |
| 23 | 52 | 39 | 36 | 36 | 38 | 56 | 56 | 55 | 66 | 89 | 56 | 60 |
| 24 | 57 | 43 | 36 | 36 | 59 | 56 | 56 | 55 | 61 | 89 | 56 | 60 |
| 25 | 62 | 39 | 36 | 36 | 78 | 56 | 54 | 55 | 57 | 101 | 54 | 54 |
| 26 | 59 | 42 | 34 | 36 | 67 | 56 | 56 | 53 | 61 | 99 | 51 | 54 |
| 27 | 62 | 42 | 35 | 36 | 67 | 58 | 59 | 53 | 56 | 57 | 54 | 49 |
| 28 | 59 | 41 | 34 | 36 | 59 | 58 | 56 | 59 | 51 | 52 | 44 | 48 |
| 29 | 56 | 41 | 34 | 36 | ..... | 61 | 59 | 45 | 58 | 47 | 44 | 46 |
| 30 | 56 | 40 | 36 | 36 | ..... | 65 | 51 | 49 | 53 | 57 | 59 | 43 |
| 31 | 63 | ..... | 36 | 35 | ..... | 75 | ..... | 62 | ..... | 49 | 57 | ..... |

*Combined monthly discharge of Santa Ana River and Pacific Light & Power Co.'s canal, including Bear Valley-Greenspot pipe line near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 63 | 44 | 54.8 | 3,370 |
| November | 50 | 34 | 39.1 | 2,330 |
| December | 45 | 31 | 36.6 | 2,250 |
| January | 50 | 16 | 34.2 | 2,100 |
| February | 78 | 35 | 44.6 | 2,480 |
| March | 75 | 46 | 54.3 | 3,340 |
| April | 75 | 51 | 61.4 | 3,650 |
| May | 66 | 45 | 58.4 | 3,590 |
| June | 66 | 49 | 57.5 | 3,420 |
| July | 101 | 30 | 66.3 | 4,080 |
| August | 68 | 44 | 58.5 | 3,600 |
| September | 65 | 43 | 57.7 | 3,430 |
| The year | 101 | 16 | 52.0 | 37,600 |

## PACIFIC LIGHT & POWER CO.'S CANAL[1] AND BEAR VALLEY-GREENSPOT PIPE LINE NEAR MENTONE, CAL.

LOCATION.—At tailrace of Pacific Light & Power Co.'s plant at mouth of canyon, about 3 miles northeast of Mentone.

RECORDS AVAILABLE.—1896 to September 30, 1913.

GAGE.—Hook gage at weir about 300 feet west of power house.

DISCHARGE.—Computed from gage heights which give head on 10-foot rectangular weir.

DIVERSIONS.—The Greenspot pipe line diverts water from the forebay, and the quantity diverted must be added to give total flow of canal. The pipe line was put in operation September 7, 1911.

ACCURACY.—Results excellent.

[1] Formerly known as Mentone Power Co.'s canal.

*Daily discharge, in second-feet, of Pacific Light & Power Co.'s canal near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 51 | 41 | 41 | 34 | 34 | 42 | 68 | 46 | 51 | 56 | 51 | 54 |
| 2 | 54 | 29 | 32 | 34 | 32 | 44 | 71 | 54 | 49 | 58 | 54 | 51 |
| 3 | 54 | 39 | 29 | 34 | 32 | 45 | 65 | 54 | 51 | 58 | 56 | 51 |
| 4 | 45 | 34 | 32 | 34 | 32 | 49 | 60 | 54 | 54 | 58 | 58 | 54 |
| 5 | 49 | 34 | 32 | 27 | 34 | 51 | 63 | 54 | 49 | 56 | 56 | 56 |
| 6 | 41 | 32 | 27 | 13 | 37 | 51 | 63 | 54 | 54 | 58 | 58 | 58 |
| 5 | 37 | 34 | 27 | 15 | 38 | 54 | 60 | 58 | 54 | 58 | 51 | 60 |
| 8 | 41 | 32 | 29 | 23 | 58 | 51 | 58 | 60 | 49 | 60 | 60 | 54 |
| 9 | 45 | 29 | 29 | 27 | 44 | 49 | 60 | 58 | 51 | 58 | 58 | 56 |
| 10 | 45 | 32 | 34 | 27 | 38 | 49 | 63 | 54 | 51 | 54 | 58 | 56 |
| 11 | 45 | 44 | 34 | 29 | 38 | 44 | 60 | 54 | 54 | 58 | 56 | 58 |
| 12 | 49 | 34 | 37 | 29 | 37 | 44 | 60 | 56 | 49 | 54 | 56 | 58 |
| 13 | 49 | 34 | 37 | 27 | 37 | 44 | 60 | 56 | 49 | 49 | 56 | 58 |
| 14 | 51 | 29 | 37 | 27 | 34 | 41 | 60 | 58 | 46 | 27 | 54 | 58 |
| 15 | 56 | 29 | 37 | 29 | 34 | 41 | 54 | 58 | 54 | 54 | 54 | 51 |
| 16 | 56 | 32 | 37 | 45 | 34 | 38 | 51 | 60 | 46 | 56 | 54 | 51 |
| 17 | 54 | 29 | 37 | 38 | 34 | 38 | 51 | 58 | 51 | 48 | 54 | 51 |
| 18 | 54 | 29 | 32 | 37 | 34 | 44 | 55 | 51 | 49 | 0 | 54 | 58 |
| 19 | 51 | 29 | 37 | 34 | 32 | 41 | 51 | 58 | 51 | 0 | 58 | 58 |
| 20 | 43 | 32 | 32 | 34 | 34 | 49 | 51 | 51 | 54 | 0 | 58 | 56 |
| 21 | 41 | 34 | 29 | 32 | 34 | 46 | 46 | 54 | 56 | 0 | 56 | 58 |
| 22 | 45 | 34 | 32 | 32 | 37 | 44 | 49 | 49 | 58 | 0 | 49 | 58 |
| 23 | 44 | 34 | 32 | 32 | 34 | 48 | 51 | 51 | 63 | 0 | 51 | 58 |
| 24 | 49 | 38 | 32 | 32 | 55 | 46 | 51 | 51 | 58 | 0 | 51 | 58 |
| 25 | 54 | 34 | 32 | 32 | 71 | 46 | 49 | 51 | 54 | [a]12 | 49 | 49 |
| 26 | 51 | 37 | 32 | 32 | 60 | 46 | 51 | 49 | 54 | 32 | 46 | 49 |
| 27 | 54 | 37 | 32 | 32 | 60 | 48 | 54 | 49 | 49 | 51 | 49 | 44 |
| 28 | 51 | 37 | 32 | 32 | 54 | 48 | 51 | 51 | 44 | 46 | 41 | 46 |
| 29 | 51 | 37 | 32 | 32 | ..... | 51 | 54 | 37 | 51 | 41 | 41 | 44 |
| 30 | 51 | 44 | 34 | 32 | ..... | 55 | 46 | 41 | 46 | 51 | 56 | 41 |
| 31 | 56 | ..... | 34 | 34 | ..... | 65 | ..... | 54 | ..... | 44 | 54 | ..... |

[a] Estimated.

NOTE.—July 18 to 24, water turned into river at intake on account of break in flume.

*Monthly discharge of Pacific Light & Power Co.'s canal near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 56 | 37 | 48.9 | 3,010 |
| November | 44 | 29 | 34.1 | 2,030 |
| December | 41 | 27 | 33.0 | 2,030 |
| January | 45 | 13 | 30.7 | 1,890 |
| February | 71 | 32 | 40.4 | 2,240 |
| March | 65 | 38 | 46.9 | 2,880 |
| April | 71 | 46 | 56.2 | 3,340 |
| May | 60 | 37 | 53.0 | 3,260 |
| June | 63 | 44 | 51.6 | 3,070 |
| July | 60 | 0 | 38.6 | 2,370 |
| August | 60 | 41 | 53.5 | 3,290 |
| September | 60 | 41 | 53.7 | 3,200 |
| The year | 71 | 0 | 45.1 | 32,600 |

*Daily discharge, in second-feet, of Bear Valley-Greenspot pipe line near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.5 | 3.5 | 2.5 | 0.8 | 1.4 | 2.5 | 2.5 | 3.5 | 6.0 | 2.0 | 4.0 | 2.0 |
| 2 | 4.5 | 3.5 | 2.5 | .8 | 1.4 | 2.5 | 2.5 | 3.5 | 6.0 | 2.0 | 4.0 | 2.0 |
| 3 | 6.5 | 3.5 | 2.5 | 1.5 | 1.4 | 2.5 | 2.5 | 3.5 | 3.0 | 3.0 | 4.0 | 4.0 |
| 4 | 6.5 | 3.5 | 2.5 | 1.5 | 1.4 | 2.5 | 2.5 | 3.5 | 3.0 | 3.0 | 6.5 | 4.0 |
| 5 | 6.5 | 3.5 | 2.5 | 1.5 | 1.9 | 2.5 | 6.5 | 2.0 | 3.0 | 3.0 | 6.5 | 4.0 |
| 6 | 6.5 | 3.5 | 2.5 | 1.5 | 1.9 | 2.5 | 6.5 | 2.0 | 6.0 | 5.0 | 6.5 | 4.0 |
| 7 | 6.5 | 3.5 | 2.5 | 1.0 | 1.9 | 2.5 | 6.5 | 2.0 | 6.0 | 5.0 | 6.5 | 4.0 |
| 8 | 2.0 | 3.5 | 2.5 | 1.0 | 2.5 | 2.5 | 6.5 | 4.0 | 6.0 | 5.0 | 6.5 | 4.0 |
| 9 | 2.0 | 3.5 | 2.5 | 1.0 | 2.5 | 2.5 | 6.5 | 4.0 | 6.0 | 5.0 | 6.5 | 2.0 |
| 10 | 2.0 | 3.5 | 2.5 | 4.0 | 2.5 | 2.5 | 2.5 | 5.0 | 4.0 | 5.0 | 2.5 | 2.0 |
| 11 | 2.0 | 3.5 | 2.5 | 1.5 | 2.5 | 6.5 | 2.5 | 5.0 | 4.0 | 1.3 | 1.5 | 1.0 |
| 12 | 2.0 | 3.5 | 2.5 | 1.5 | 2.5 | 6.5 | 2.5 | 5.0 | 4.0 | 1.3 | 1.5 | 1.0 |
| 13 | 2.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 2.5 | 5.0 | 2.0 | 1.3 | 1.5 | 1.0 |
| 14 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | .5 | 2.0 | 1.3 | 1.5 | 5.0 |
| 15 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | .5 | 2.0 | 5.0 | 4.5 | 5.0 |
| 16 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | .5 | 6.0 | 5.0 | 4.5 | 5.0 |
| 17 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | .5 | 6.0 | 5.0 | 4.5 | 5.0 |
| 18 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 6.0 | 6.0 | .0 | 3.0 | 5.0 |
| 19 | 3.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 6.0 | 6.0 | .0 | 3.0 | 3.0 |
| 20 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 6.0 | 6.0 | .0 | 3.5 | 3.0 |
| 21 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 4.0 | 4.0 | .0 | 3.5 | 3.0 |
| 22 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 4.0 | 4.0 | .0 | 3.5 | 3.0 |
| 23 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 6.5 | 3.5 | 2.0 | 1.5 | .0 | 3.5 | 1.0 |
| 24 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 8.5 | 3.5 | 2.0 | 1.5 | .0 | 3.5 | 1.0 |
| 25 | 7.0 | 3.5 | 2.5 | 3.0 | 2.5 | 8.5 | 3.5 | 2.0 | 1.5 | .0 | 3.5 | 4.0 |
| 26 | 7.0 | 3.5 | 1.2 | 3.0 | 2.5 | 8.5 | 3.5 | 2.0 | 6.0 | 4.0 | 3.5 | 4.0 |
| 27 | 7.0 | 3.5 | 2.2 | 3.0 | 2.5 | 8.5 | 3.5 | 2.0 | 6.0 | 4.0 | 3.5 | 4.0 |
| 28 | 7.0 | 2.5 | .8 | 3.0 | 2.5 | 8.5 | 3.5 | 6.0 | 6.0 | 4.0 | 2.0 | 1.5 |
| 29 | 3.5 | 2.5 | .8 | 3.0 | ..... | 8.5 | 3.5 | 6.0 | 6.0 | 4.0 | 2.0 | 1.5 |
| 30 | 3.5 | 2.5 | .8 | 3.0 | ..... | 8.5 | 3.5 | 6.0 | 6.0 | 4.0 | 2.0 | 1.5 |
| 31 | 5.5 | ..... | .8 | 0.0 | ..... | 8.5 | ..... | 6.0 | ..... | 4.0 | 2.0 | ..... |

*Monthly discharge of Bear Valley-Greenspot pipe line near Mentone, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 7 | 2.0 | 4.74 | 291 |
| November | 3.5 | 2.5 | 3.40 | 202 |
| December | 2.5 | .8 | 2.23 | 137 |
| January | 4 | .0 | 2.31 | 142 |
| February | 2.5 | 1.4 | 2.28 | 127 |
| March | 8.5 | 2.5 | 5.73 | 352 |
| April | 6.5 | 2.5 | 3.73 | 222 |
| May | 6 | .5 | 3.55 | 218 |
| June | 6 | 1.5 | 4.52 | 269 |
| July | 5 | .0 | 2.65 | 163 |
| August | 6.5 | 1.5 | 3.71 | 228 |
| September | 5 | 1 | 3.02 | 180 |
| The year | 8.5 | 0 | 3.51 | 2,530 |

## MILL CREEK AT FOREST HOME,[1] CAL.

LOCATION.—In the NW. ¼ NE. ¼ sec. 13, T. 1 S., R. 1 W., at Forest Home, about 2½ miles below Falls Creek, 4 miles above Mountain Home Creek, and 14 miles east of Redlands.

RECORDS AVAILABLE.—September 23, 1903, to September 30, 1913.

DRAINAGE AREA.—Not measured.

DISCHARGE.—Computed by combining flow in power canal with flow over diverting dam. Current-meter measurements are made on canal. The flow over diverting dam is approximate and no report is made when total discharge exceeds 100 second-feet.

ACCURACY.—Daily discharge is mean of observations recorded each day at 6 a. m. and 6 p. m. When total flow of Mill Creek is diverted into power canal results are good; at higher stages they are approximate.

COOPERATION.—Estimates of daily discharge are furnished by the Southern California Edison Co., through H. W. Dennis, construction engineer.

*Daily discharge, in second-feet, of Mill Creek at Forest Home, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 19 | 18 | 16 | 16 | 18 | 28 | 29 | 21 | 15 | 12 | 11 |
| 2 | 29 | 19 | 18 | 16 | 16 | 19 | 29 | 28 | 21 | 14 | 12 | 10 |
| 3 | 38 | 20 | 18 | 16 | 16 | 19 | 26 | 30 | 20 | 14 | 12 | 10 |
| 4 | 26 | 20 | 18 | 16 | 16 | 19 | 27 | 28 | 20 | 14 | 12 | 10 |
| 5 | 25 | 19 | 18 | 16 | 16 | 20 | 27 | 27 | 20 | 14 | 12 | 11 |
| 6 | 24 | 19 | 18 | 16 | 16 | 20 | 26 | 28 | 22 | 14 | 14 | 10 |
| 7 | 24 | 19 | 18 | 14 | 17 | 20 | 27 | 28 | 21 | 13 | 15 | 10 |
| 8 | 24 | 19 | 18 | 15 | 21 | 20 | 26 | 29 | 20 | 13 | 13 | 10 |
| 9 | 24 | 19 | 17 | 16 | 18 | 20 | 28 | 28 | 19 | 13 | 13 | 10 |
| 10 | 23 | 21 | 17 | 16 | 17 | 20 | 28 | 29 | 19 | 13 | 12 | 10 |
| 11 | 22 | 22 | 17 | 16 | 17 | 20 | 28 | 28 | 18 | 13 | 12 | 10 |
| 12 | 20 | 20 | 17 | 16 | 17 | 20 | 28 | 28 | 18 | 15 | 12 | 11 |
| 13 | 23 | 20 | 17 | 16 | 16 | 20 | 28 | 28 | 18 | 13 | 12 | 11 |
| 14 | 21 | 19 | 17 | 16 | 16 | 20 | 28 | 23 | 18 | 13 | 12 | 10 |
| 15 | 20 | 19 | 17 | 17 | 16 | 19 | 27 | 24 | 17 | 13 | 12 | 10 |
| 16 | 20 | 19 | 17 | 17 | 16 | 19 | 26 | 21 | 17 | 12 | 11 | 10 |
| 17 | 20 | 19 | 17 | 17 | 16 | 20 | 26 | 24 | 17 | 12 | 11 | 10 |
| 18 | 20 | 19 | 17 | 17 | 16 | 21 | 27 | 24 | 16 | 13 | 11 | 10 |
| 19 | 20 | 18 | 16 | 16 | 16 | 20 | 26 | 24 | 16 | 13 | 11 | 10 |
| 20 | 21 | 18 | 16 | 16 | 16 | 20 | 26 | 24 | 16 | 14 | 11 | 10 |
| 21 | 21 | 18 | 16 | 16 | 16 | 21 | 26 | 24 | 16 | 15 | 11 | 10 |
| 22 | 21 | 18 | 16 | 16 | 16 | 21 | 27 | 24 | 16 | 14 | ..... | 10 |
| 23 | 20 | 18 | 16 | 16 | 16 | 21 | 28 | 24 | 16 | 14 | 14 | 10 |
| 24 | 20 | 18 | 16 | 16 | 22 | 21 | 28 | 24 | 15 | 13 | 11 | 10 |
| 25 | 19 | 17 | 16 | 16 | 21 | 21 | 28 | 23 | 16 | 13 | 11 | 10 |
| 26 | 19 | 18 | 16 | 16 | 20 | 22 | 28 | 23 | 16 | 13 | 15 | 10 |
| 27 | 20 | 18 | 16 | 16 | 19 | 22 | 28 | 23 | 16 | 13 | 14 | 10 |
| 28 | 20 | 18 | 16 | 16 | 19 | 23 | 28 | 23 | 15 | 13 | 12 | 10 |
| 29 | 19 | 18 | 16 | 16 | ..... | 24 | 29 | 23 | 15 | 12 | 13 | 10 |
| 30 | 19 | 20 | 16 | 16 | ..... | 28 | 29 | 24 | 15 | 12 | 22 | 10 |
| 31 | 19 | ..... | 16 | 16 | ..... | 29 | ..... | 22 | ..... | 12 | 13 | ..... |

NOTE.—Discharge is mean of two observations daily except for Jan. 18, 27, and July 21, 1913, when observations were made only in the morning. A cloudburst Aug. 22, 1913, piled débris on weir; no observations.

[1] Akers Camp on map of San Gorgonio quadrangle, U. S. Geol. Survey.

*Monthly discharge of Mill Creek at Forest Home, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 38 | 16 | 21.8 | 1,340 |
| November | 22 | 17 | 18.9 | 1,120 |
| December | 18 | 16 | 16.8 | 1,030 |
| January | 17 | 14 | 16.0 | 984 |
| February | 22 | 16 | 17.1 | 950 |
| March | 29 | 18 | 20.9 | 1,290 |
| April | 29 | 26 | 27.4 | 1,630 |
| May | 30 | 21 | 25.5 | 1,570 |
| June | 22 | 15 | 17.7 | 1,050 |
| July | 15 | 12 | 13.3 | 818 |
| September | 11 | 10 | 10.1 | 601 |

NOTE.—Monthly discharge computed by engineers of U. S. Geological Survey.

## WATERMAN CANYON CREEK NEAR SAN BERNARDINO, CAL.

LOCATION.—In the SW. ¼ SW. ¼ sec. 2, T. 1 N., R. 4 W., just above old toll bridge at mouth of canyon, about 6 miles north of San Bernardino.

RECORDS AVAILABLE.—November 2, 1911, to September 30, 1913.

DRAINAGE AREA.—4.55 square miles.

GAGE.—Vertical staff fastened to an alder tree on left bank about 300 feet above bridge.

CHANNEL.—Bowlders and gravel; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from foot plank 15 feet below gage or by wading.

ACCURACY.—Rating curves fairly well defined; results fair.

*Discharge measurements of Waterman Canyon Creek near San Bernardino, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 22 | F. C. Ebert | 1.66 | 0.9 | Mar. 4 | F. C. Ebert | 2.01 | 4.8 |
| Dec. 10 | do | 1.84 | 1.7 | Apr. 4 | do | 1.89 | 2.0 |
| Jan. 14 | do | 1.81 | 1.4 | 23 | H. D. McGlashan | 1.85 | 2.0 |
| Feb. 10 | do | 1.83 | 2.8 | May 30 | F. C. Ebert | 1.74 | 1.5 |
| 11 | do | 1.82 | 2.5 | July 11 | do | 1.63 | .3 |

*Daily gage height, in feet, of Waterman Canyon Creek near San Bernardino, Cal., for the year ending Sept. 30, 1913.*

[H. E. Mastin, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.67 | 1.75 | 1.82 | 1.82 | 1.77 | 2.08 | 1.92 | 1.82 | 1.77 | 1.72 | 1.71 | 1.84 |
| 2 | 1.85 | 1.76 | 1.83 | 1.84 | 1.77 | 2.04 | 1.90 | 1.83 | 1.77 | 1.72 | 1.67 | 1.74 |
| 3 | 1.98 | 1.75 | 1.82 | 1.80 | 1.80 | 2.01 | 1.90 | 1.82 | 1.78 | 1.75 | 1.68 | 1.83 |
| 4 | 1.87 | 1.75 | 1.83 | 1.87 | 1.77 | 2.02 | 1.91 | 1.81 | 1.78 | 1.73 | 1.72 | ..... |
| 5 | 1.88 | 1.74 | 1.84 | 1.85 | 1.78 | 2.01 | 1.88 | 1.80 | 1.76 | 1.75 | 1.65 | 1.60 |
| 6 | 1.89 | 1.74 | 1.85 | 1.87 | 1.80 | 2.00 | 1.90 | 1.81 | 1.74 | 1.72 | 1.70 | 1.52 |
| 7 | 1.87 | 1.73 | 1.85 | 1.90 | 1.78 | 2.01 | 1.88 | 1.80 | 1.78 | 1.67 | 1.68 | 1.72 |
| 8 | 1.88 | 1.75 | 1.86 | 1.88 | 1.96 | 1.98 | 1.88 | 1.80 | 1.72 | 1.62 | 1.65 | 1.75 |
| 9 | 1.88 | 1.75 | 1.87 | 1.87 | 1.90 | 1.95 | 1.89 | 1.80 | 1.77 | 1.70 | 1.70 | ..... |
| 10 | 1.87 | ..... | 1.87 | 1.92 | 1.83 | 1.94 | 1.86 | 1.81 | 1.75 | 1.66 | 1.69 | ..... |
| 11 | 1.87 | ..... | 1.85 | 1.88 | 1.82 | 1.98 | 1.88 | 1.81 | 1.73 | 1.62 | 1.70 | 1.71 |
| 12 | 1.87 | 1.87 | 1.85 | 1.85 | 1.81 | 1.95 | 1.87 | 1.81 | 1.71 | 1.73 | 1.71 | 1.67 |
| 13 | 1.85 | 1.85 | 1.84 | 1.83 | 1.83 | 1.94 | 1.85 | 1.80 | 1.72 | 1.76 | 1.50 | 1.71 |
| 14 | 1.87 | 1.80 | 1.83 | 1.81 | 1.81 | 1.93 | 1.89 | 1.81 | 1.70 | 1.75 | 1.58 | 1.61 |
| 15 | 1.85 | 1.83 | 1.85 | 1.90 | 1.80 | 1.92 | 1.85 | 1.80 | 1.73 | 1.72 | 1.73 | ..... |
| 16 | 1.85 | 1.82 | 1.84 | 1.88 | 1.78 | 1.92 | 1.87 | 1.81 | 1.70 | 1.71 | 1.72 | ..... |
| 17 | 1.84 | 1.82 | 1.85 | 1.85 | 1.78 | 1.91 | 1.87 | 1.81 | 1.71 | 1.62 | 1.72 | ..... |
| 18 | 1.84 | 1.83 | 1.86 | 1.81 | 1.77 | 1.93 | 1.89 | 1.78 | 1.73 | 1.72 | 1.74 | 1.71 |
| 19 | 1.85 | 1.85 | 1.85 | 1.82 | 1.81 | 1.92 | 1.90 | 1.74 | 1.74 | 1.71 | 1.51 | 1.70 |
| 20 | 1.87 | 1.84 | 1.87 | 1.80 | 1.82 | 1.95 | 1.88 | 1.75 | 1.69 | 1.68 | 1.70 | 1.71 |
| 21 | 1.87 | 1.83 | 1.85 | 1.78 | 1.80 | 1.92 | 1.87 | 1.71 | 1.71 | 1.73 | ..... | 1.71 |
| 22 | 1.85 | 1.84 | 1.84 | 1.76 | 1.83 | 1.94 | 1.88 | 1.71 | 1.73 | 1.73 | 1.73 | 1.68 |
| 23 | 1.84 | 1.85 | 1.83 | 1.75 | 1.87 | 1.98 | 1.85 | 1.72 | 1.70 | 1.71 | 1.71 | 1.68 |
| 24 | 1.80 | 1.83 | 1.82 | 1.75 | 2.30 | 1.95 | 1.86 | 1.72 | 1.75 | 1.70 | 1.70 | 1.70 |
| 25 | 1.78 | 1.83 | 1.83 | 1.74 | 2.50 | 1.94 | 1.82 | 1.83 | 1.78 | 1.65 | 1.64 | 1.58 |
| 26 | 1.75 | 1.84 | 1.84 | 1.73 | 2.20 | 1.92 | 1.85 | 1.77 | 1.79 | ..... | 1.58 | 1.71 |
| 27 | 1.73 | 1.83 | 1.82 | 1.74 | 2.18 | 1.91 | 1.80 | 1.78 | 1.80 | 1.75 | ..... | 1.74 |
| 28 | 1.74 | 1.82 | 1.83 | 1.75 | 2.12 | 1.90 | 1.82 | 1.78 | 1.76 | 1.75 | ..... | 1.73 |
| 29 | 1.73 | 1.85 | 1.81 | 1.74 | ..... | 1.89 | 1.83 | 1.80 | 1.75 | 1.70 | 1.77 | 1.68 |
| 30 | 1.72 | 1.82 | 1.82 | 1.73 | ..... | 1.90 | 1.80 | 1.75 | 1.75 | 1.70 | 1.80 | 1.74 |
| 31 | 1.74 | ..... | 1.81 | 1.74 | ..... | 1.91 | ..... | 1.73 | ..... | 1.76 | 1.81 | ..... |

NOTE.—Rapid run-off Sept. 29 to Oct. 5, due to rain, washed small rocks on control; the débris was removed and gage height lowered 0.13 foot on Oct. 22, 1912. Reliability of observer's record Oct. 23 to Nov. 9, 1912, somewhat doubtful. Creek reported dry Sept. 15 to 17, 1913.

*Daily discharge, in second-feet, of Waterman Canyon Creek near San Bernardino, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 0.9 | 1.5 | 1.5 | 1.0 | 7 | 2.5 | 1.0 | 2.0 | 1.0 | 1.0 | 3.0 |
| 2 | 4 | .9 | 1.5 | .2 | 1 | 6 | 2.5 | 1.5 | 2 | 1 | .7 | 1.5 |
| 3 | 8 | .9 | 1.5 | 1 | 1 | 5 | 2.5 | 1.5 | 2 | 1.5 | .8 | 3 |
| 4 | 2 | .9 | 1.5 | 2.5 | 1 | 5 | 2.5 | 1.5 | 2 | 1.5 | 1 | 1.5 |
| 5 | 2 | .9 | 2 | 2 | 1 | 5 | 2 | 1 | 1.5 | 1.5 | .6 | .2 |
| 6 | 2 | .9 | 2 | 2.5 | 1 | 4.5 | 2.5 | 1.5 | 1.5 | 1 | .9 | .1 |
| 7 | 2 | .9 | 2 | 3 | 1 | 5 | 2 | 1 | 2 | .7 | .8 | 1 |
| 8 | 2 | .9 | 2 | 2.5 | 4 | 4 | 2 | 1 | 1 | .3 | .6 | 1.5 |
| 9 | 2 | .9 | 2.5 | 2.5 | 4 | 3.5 | 2 | 1 | 2 | .9 | .9 | 1.5 |
| 10 | 2 | 1.5 | 2.5 | 3.5 | 3 | 3 | 1.5 | 1.5 | 1.5 | .6 | .8 | 1 |
| 11 | 2 | 2 | 2 | 2.5 | 2.5 | 4 | 2 | 1.5 | 1.5 | .3 | .9 | 1 |
| 12 | 2 | 2.5 | 2 | 2 | 2.5 | 3.5 | 2 | 1.5 | 1 | 1.5 | 1 | .7 |
| 13 | 1.5 | 2 | 2 | 1.5 | 3 | 3 | 1.5 | 1 | 1 | 1.5 | .1 | 1 |
| 14 | 2 | 1 | 1.5 | 1.5 | 2.5 | 3 | 2 | 1.5 | .9 | 1.5 | .2 | .3 |
| 15 | 1.5 | 1.5 | 2 | 3 | 2 | 2.5 | 1.5 | 1 | 1.5 | 1 | 1.5 | .0 |
| 16 | 1.5 | 1.5 | 2 | 2.5 | 2 | 2.5 | 2 | 1.5 | .9 | 1 | 1 | .0 |
| 17 | 1.5 | 1.5 | 2 | 2 | 2 | 2.5 | 2 | 1.5 | 1 | .3 | 1 | .0 |
| 18 | 1.5 | 1.5 | 2 | 1.5 | 2 | 3 | 2 | 1 | 1.5 | 1 | 1.5 | 1 |
| 19 | 1.5 | 2 | 2 | 1.5 | 2.5 | 2.5 | 2.5 | .7 | 1.5 | 1 | .1 | .9 |
| 20 | 2 | 2 | 2.5 | 1 | 2.5 | 3.5 | 2.5 | .8 | .8 | .8 | .9 | 1 |
| 21 | 2 | 1.5 | 2 | 1 | 2 | 2.5 | 2.5 | .5 | 1 | 1.5 | 1 | 1 |
| 22 | .9 | 2 | 2 | .9 | 3 | 3 | 2.5 | .5 | 1.5 | 1.5 | 1.5 | .8 |
| 23 | .9 | 2 | 1.5 | .8 | 3.5 | 4 | 2 | .6 | .9 | 1 | 1 | .8 |
| 24 | .9 | 1.5 | 1.5 | .8 | 25 | 3.5 | 2 | .6 | 1.5 | .9 | .9 | .9 |
| 25 | .9 | 1.5 | 1.5 | .7 | 43 | 3 | 1.5 | 1.5 | 2 | .6 | .5 | .2 |
| 26 | .9 | 2 | 2 | .6 | 12 | 2.5 | 2 | 2 | 2 | 1 | .2 | 1 |
| 27 | .9 | 1.5 | 1.5 | .7 | 11 | 2.5 | 1 | 2 | 2 | 1.5 | .8 | 1.5 |
| 28 | .9 | 1.5 | 1.5 | .8 | 8.5 | 2.5 | 1.5 | 2 | 1.5 | 1.5 | 1.5 | 1.5 |
| 29 | .9 | 2 | 1.5 | .7 | ..... | 2 | 1.5 | 2 | 1.5 | .9 | 2 | .8 |
| 30 | .9 | 1.5 | 1.5 | .6 | ..... | 2.5 | 1 | 1.5 | 1.5 | .9 | 2 | 1.5 |
| 31 | .9 | ..... | 1.5 | .7 | ..... | 2.5 | ..... | 1.5 | ..... | 1.5 | 2.5 | ..... |

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: Oct. 1 to 3, 1912, same as for Mar. 19 to Sept. 30, 1912; Oct. 4 to 21, 1912, and Feb. 26 to April 19, 1913; Nov. 12, 1912, to Feb. 8, 1913, and Apr. 20 to May 25, 1913; Feb. 9 to 25, 1913, and May 26 to Sept. 30, 1913. Discharge estimated Oct. 22 to Nov. 9, 1912, because of uncertainty in gage height record; that for other periods for which record is not given estimated by comparison with record of Devil Canyon Creek near San Bernardino.

*Monthly discharge of Waterman Canyon Creek near San Bernardino, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 8 | 0.9 | 1.77 | 109 | D. |
| November | 2.5 | .9 | 1.47 | 87 | D. |
| December | 2.5 | 1.5 | 1.84 | 113 | D. |
| January | 3.5 | .6 | 1.62 | 100 | D. |
| February | 43 | 1 | 5.34 | 297 | D. |
| March | 7 | 2 | 3.50 | 215 | D. |
| April | 2.5 | 1 | 1.98 | 118 | D. |
| May | 2 | .5 | 1.26 | 77 | D. |
| June | 2 | .8 | 1.48 | 88 | D. |
| July | 1.5 | .3 | 1.05 | 65 | D. |
| August | 2.5 | .1 | .97 | 60 | D. |
| September | 3 | 0 | 1.01 | 60 | D. |
| The year | 43 | 0 | 1.92 | 1,390 | |

## LYTLE CREEK NEAR SAN BERNARDINO, CAL.

LOCATION.—In the NW. ¼ sec. 25, T. 2 N., R. 6 W., at Southern California Edison Co.'s diversion dam, below junction of North and Middle forks of Lytle Creek, in Angeles National Forest, about 3 miles above mouth of canyon, and 14 miles northwest of San Bernardino.

RECORDS AVAILABLE.—September 18, 1904, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder in pool above weir in power canal.

DISCHARGE.—Computed by combining flow in power canal with flow over diverting dam. Discharge of power canal is measured near the intake by an 8-foot steel plate rectangular weir. Flow over diverting dam is estimated, and no record is furnished when total estimated discharge exceeds 80 second-feet.

ACCURACY.—Daily discharge is mean of observations recorded each day at 6 a. m. and 6 p. m. When total flow of Lytle Creek is diverted into power canal the results are good; above 23 second-feet (capacity of canal) they are approximate.

COOPERATION.—Estimates of daily discharge are furnished by the Southern California Edison Co., through H. W. Dennis, construction engineer.

*Daily discharge, in second-feet, of Lytle Creek, San Bernardino, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 22 | 21 | 19 | 19 | 34 | 22 | 22 | 18 | 14 | 9.8 | 9.5 |
| 2 | 19 | 22 | 21 | 19 | 20 | 34 | 22 | 22 | 19 | 13 | 9.6 | 9.3 |
| 3 | 20 | 22 | 21 | 19 | 20 | 29 | 22 | 22 | 19 | 12 | 9.6 | 9.0 |
| 4 | 21 | 22 | 21 | 19 | 19 | 28 | 22 | 22 | 18 | 13 | 9.2 | 9.0 |
| 5 | 21 | 22 | 21 | 20 | 19 | 26 | 23 | 21 | 18 | 13 | 9.4 | 8.2 |
| 6 | 20 | 22 | 21 | 19 | 20 | 26 | 22 | 21 | 18 | 12 | 9.4 | 8.2 |
| 7 | 20 | 22 | 21 | 19 | 20 | 26 | 22 | 21 | 17 | 12 | 9.2 | 8.5 |
| 8 | 20 | 22 | 21 | 19 | 24 | 26 | 22 | 21 | 17 | 12 | 9.2 | 8.4 |
| 9 | 20 | 23 | 21 | 20 | 22 | 26 | 22 | 20 | 18 | 12 | 9.1 | 8.0 |
| 10 | 20 | 23 | 21 | 20 | 22 | 26 | 22 | 20 | 17 | 11 | 9.0 | 8.0 |
| 11 | 20 | 22 | 21 | 19 | 22 | 27 | 22 | 20 | 16 | 12 | 8.8 | 8.0 |
| 12 | 20 | 23 | 21 | 19 | 22 | 29 | 22 | 20 | 16 | 11 | 8.6 | 8.2 |
| 13 | 20 | 22 | 21 | 19 | 22 | 27 | 22 | 20 | 16 | 11 | 8.4 | 8.2 |
| 14 | 20 | 22 | 21 | 19 | 22 | 27 | 22 | 20 | 16 | 11 | 8.6 | 8.2 |
| 15 | 20 | 22 | 20 | 70 | 22 | 27 | 22 | 20 | 15 | 12 | 8.5 | 8.0 |
| 16 | 20 | 22 | 20 | 21 | 22 | 26 | 22 | 19 | 15 | 11 | 8.5 | 7.8 |
| 17 | 20 | 22 | 20 | 27 | 22 | 26 | 22 | 19 | 15 | 11 | 8.5 | 8.0 |
| 18 | 20 | 22 | 20 | 22 | 21 | 26 | 22 | 20 | 15 | 11 | 8.5 | 8.0 |
| 19 | 20 | 21 | 20 | 22 | 21 | 26 | 22 | 20 | 14 | 11 | 8.4 | 8.2 |
| 20 | 20 | 21 | 20 | 22 | 21 | 26 | 23 | 20 | 14 | 11 | 8.2 | 12 |
| 21 | 20 | 21 | 20 | 22 | 21 | 26 | 22 | 19 | 14 | 11 | 8.2 | 8.2 |
| 22 | 21 | 21 | 20 | 22 | 21 | 25 | 23 | 18 | 13 | 11 | 8.7 | 8.5 |
| 23 | 21 | 21 | 21 | 21 | 21 | 25 | 22 | 19 | 13 | 11 | 8.0 | 8.6 |
| 24 | 21 | 21 | 20 | 21 | 47 | 24 | 22 | 19 | 14 | 10 | 8.1 | 8.4 |
| 25 | 21 | 21 | 20 | 20 | (a) | 23 | 22 | 20 | 14 | 10 | 8.0 | 8.4 |
| 26 | 22 | 21 | 20 | 20 | 47 | 23 | 21 | 19 | 14 | 11 | 8.2 | 8.4 |
| 27 | 22 | 21 | 20 | 19 | 38 | 22 | 22 | 20 | 15 | 11 | 8.3 | 9.0 |
| 28 | 23 | 21 | 20 | 20 | 35 | 22 | 21 | 19 | 14 | 11 | 8.1 | 8.5 |
| 29 | 23 | 21 | 20 | 20 | ..... | 22 | 22 | 19 | 14 | 11 | 8.2 | 8.7 |
| 30 | 23 | 22 | 20 | 20 | ..... | 22 | 22 | 19 | 13 | 11 | 8.6 | 8.6 |
| 31 | 23 | ..... | 20 | 20 | ..... | 21 | ..... | 19 | ..... | 11 | 9.0 | ..... |

[a] Discharge more than 80 second-feet.

NOTE.—Discharge is mean of two observations daily except for Feb. 7, Mar. 26, and Sept. 3, 1913, when observations were made only in the morning. Discharge interpolated Dec. 4, 1912, and Mar. 14, 1913.

*Monthly discharge of Lytle Creek near San Bernardino, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 23 | 18 | 20.6 | 1,270 |
| November | 23 | 21 | 21.7 | 1,290 |
| December | 21 | 20 | 20.5 | 1,260 |
| January | 70 | 19 | 21.9 | 1,350 |
| March | 34 | 21 | 25.9 | 1,590 |
| April | 23 | 21 | 22.0 | 1,310 |
| May | 22 | 18 | 20.0 | 1,230 |
| June | 19 | 13 | 15.6 | 928 |
| July | 14 | 10 | 11.5 | 707 |
| August | 9.8 | 8.0 | 8.71 | 536 |
| September | 12 | 7.8 | 8.53 | 508 |

NOTE.—Monthly discharge computed by engineers of U. S. Geological Survey.

## SAN GABRIEL RIVER BASIN.

### SAN GABRIEL RIVER AT HEADWORKS NEAR AZUSA, CAL.

LOCATION.—In the SE. ¼ sec. 31, T. 2, N., R. 9 W., in Angeles National Forest, at ford, 500 feet above intake of Pacific Light & Power Co.'s canal, and about 6 miles northeast of Azusa.

RECORDS AVAILABLE.—December 9, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff bolted to granite cliff on right bank just above ford.

CHANNEL.—Gravel and bowlders; shifting.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

ACCURACY.—Discharge computed from fairly well defined rating curves and by indirect method for shifting channels. Results at high water approximate; good for other stages.

COOPERATION.—Station maintained in cooperation with Pacific Light & Power Co.

*Discharge measurements of San Gabriel River at headworks near Azusa, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 27 | F. C. Ebert | 4.68 | 31 | May 28 | F. C. Ebert | 5.36 | 70 |
| Jan. 11 | do | 4.71 | 31 | July 3 | do | 5.16 | 34 |
| Feb. 5 | do | 4.74 | 44 | Aug. 11 | do | 5.00 | 18 |
| 9 | do | 5.49 | 175 | Sept. 27 | do | 4.97 | 15 |
| Apr. 22 | H. D. McGlashan | 5.42 | 100 | | | | |

*Daily gage height, in feet, of San Gabriel River at headworks near Azusa, Cal., for the year ending Sept. 30, 1913.*

[C. H. Paul, observer.]

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 4.65 | 4.75 | 5.8 | 5.6 | 5.4 | 5.3 | 5.15 | 5.0 | 5.0 |
| 2 | ..... | 4.65 | 4.75 | 5.7 | 5.6 | 5.4 | 5.3 | 5.15 | 5.0 | 5.0 |
| 3 | ..... | 4.65 | 4.75 | 5.65 | 5.55 | 5.4 | 5.25 | 5.15 | 5.0 | 5.0 |
| 4 | ..... | 4.65 | 4.75 | 5.7 | 5.5 | 5.4 | 5.25 | 5.15 | 5.0 | 5.0 |
| 5 | ..... | 4.65 | 4.75 | 5.7 | 5.5 | 5.4 | 5.3 | 5.15 | 5.0 | 5.0 |
| 6 | ..... | 4.65 | 4.75 | 5.7 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 7 | ..... | 4.65 | 4.9 | 5.75 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 8 | ..... | 4.65 | 6.2 | 5.7 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 9 | 4.65 | 4.7 | 5.5 | 5.7 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 10 | 4.65 | 4.7 | 5.35 | 5.65 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 11 | 4.65 | 4.7 | 5.2 | 5.7 | 5.5 | 5.4 | 5.25 | 5.1 | 5.0 | 5.0 |
| 12 | 4.65 | 4.7 | 5.1 | 5.65 | 5.5 | 5.4 | 5.2 | 5.05 | 5.0 | 5.0 |
| 13 | 4.65 | 4.7 | 5.05 | 5.6 | 5.5 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 14 | 4.65 | 4.7 | 5.0 | 5.6 | 5.5 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 15 | 4.65 | 5.0 | 5.0 | 5.55 | 5.45 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 16 | 4.65 | 5.3 | 4.95 | 5.55 | 5.45 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 17 | 4.65 | 5.3 | 4.95 | 5.5 | 5.4 | 5.3 | 5.2 | 5.05 | 5.0 | 5.0 |
| 18 | 4.65 | 5.05 | 4.95 | 5.55 | 5.5 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 19 | 4.65 | 4.95 | 4.9 | 5.55 | 5.45 | 5.35 | 5.2 | 5.05 | 5.0 | 5.0 |
| 20 | 4.65 | 4.9 | 4.9 | 5.5 | 5.4 | 5.3 | 5.15 | 5.05 | 4.95 | 5.0 |
| 21 | 4.65 | 4.85 | 4.9 | 5.5 | 5.4 | 5.3 | 5.15 | 5.1 | 5.0 | 5.0 |
| 22 | 4.65 | 4.8 | 5.0 | 5.5 | 5.4 | 5.35 | 5.15 | 5.1 | 5.0 | 5.0 |
| 23 | 4.65 | 4.75 | 4.9 | 5.5 | 5.45 | 5.35 | 5.15 | 5.05 | 5.0 | 4.95 |
| 24 | 4.65 | 4.75 | 7.45 | 5.5 | 5.45 | 5.3 | 5.15 | 5.05 | 5.0 | 5.0 |
| 25 | 4.65 | 4.75 | 7.45 | 5.5 | 5.45 | 5.3 | 5.2 | 5.05 | 5.0 | 5.0 |
| 26 | 4.65 | 4.75 | 6.55 | 5.45 | 5.45 | 5.3 | 5.2 | 5.05 | 5.0 | 4.95 |
| 27 | 4.65 | 4.75 | 6.1 | 5.45 | 5.45 | 5.3 | 5.3 | 5.1 | 5.0 | 4.95 |
| 28 | 4.65 | 4.75 | 5.9 | 5.45 | 5.45 | 5.35 | 5.3 | 5.1 | 5.0 | 4.95 |
| 29 | 4.65 | 4.75 | ..... | 5.45 | 5.45 | 5.3 | 5.2 | 5.05 | 5.0 | 4.95 |
| 30 | 4.65 | 4.75 | ..... | 5.5 | 5.45 | 5.3 | 5.2 | 5.05 | 5.0 | 4.95 |
| 31 | 4.65 | 4.75 | ..... | 5.55 | ..... | 5.3 | ..... | 5.05 | 5.0 | ..... |

*Daily discharge, in second-feet, of San Gabriel River at headworks near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 31 | 28 | 40 | 250 | 160 | 90 | 60 | 37 | 18 | 18 |
| 2 | 30 | 28 | 40 | 230 | 155 | 90 | 60 | 37 | 18 | 18 |
| 3 | 30 | 28 | 40 | 220 | 150 | 90 | 52 | 37 | 18 | 18 |
| 4 | 30 | 28 | 40 | 225 | 145 | 90 | 52 | 37 | 18 | 18 |
| 5 | 30 | 28 | 40 | 220 | 145 | 90 | 60 | 37 | 18 | 18 |
| 6 | 29 | 28 | 40 | 215 | 140 | 90 | 52 | 30 | 18 | 18 |
| 7 | 28 | 28 | 60 | 230 | 135 | 90 | 52 | 30 | 18 | 18 |
| 8 | 28 | 28 | 417 | 215 | 135 | 85 | 52 | 30 | 18 | 18 |
| 9 | 28 | 33 | 177 | 210 | 135 | 85 | 52 | 30 | 18 | 18 |
| 10 | 28 | 33 | 143 | 195 | 130 | 85 | 52 | 30 | 18 | 18 |
| 11 | 28 | 33 | 112 | 200 | 130 | 85 | 52 | 30 | 18 | 18 |
| 12 | 28 | 33 | 93 | 190 | 130 | 85 | 44 | 24 | 18 | 18 |
| 13 | 28 | 33 | 84 | 180 | 130 | 80 | 44 | 24 | 18 | 18 |
| 14 | 28 | 33 | 75 | 175 | 130 | 80 | 44 | 24 | 18 | 18 |
| 15 | 28 | 75 | 75 | 165 | 120 | 80 | 44 | 24 | 18 | 18 |
| 16 | 28 | 132 | 68 | 160 | 115 | 80 | 44 | 24 | 18 | 18 |
| 17 | 28 | 132 | 68 | 150 | 100 | 75 | 44 | 24 | 18 | 18 |
| 18 | 28 | 84 | 68 | 155 | 115 | 80 | 44 | 24 | 18 | 18 |
| 19 | 28 | 68 | 60 | 155 | 115 | 75 | 44 | 24 | 18 | 18 |
| 20 | 28 | 60 | 60 | 150 | 100 | 70 | 37 | 24 | 14 | 18 |
| 21 | 28 | 53 | 60 | 150 | 100 | 70 | 37 | 30 | 18 | 18 |
| 22 | 28 | 46 | 75 | 145 | 100 | 75 | 37 | 30 | 18 | 18 |
| 23 | 28 | 40 | 60 | 145 | 100 | 70 | 37 | 24 | 18 | 14 |
| 24 | 28 | 40 | 1,160 | 140 | 100 | 65 | 37 | 24 | 18 | 18 |
| 25 | 28 | 40 | 1,150 | 140 | 100 | 65 | 44 | 24 | 18 | 18 |
| 26 | 28 | 40 | 580 | 135 | 95 | 65 | 44 | 24 | 18 | 14 |
| 27 | 28 | 40 | 370 | 135 | 95 | 65 | 60 | 30 | 18 | 14 |
| 28 | 28 | 40 | 235 | 130 | 95 | 69 | 60 | 30 | 18 | 14 |
| 29 | 28 | 40 | ..... | 130 | 95 | 60 | 44 | 24 | 18 | 14 |
| 30 | 28 | 40 | ..... | 145 | 95 | 60 | 44 | 24 | 18 | 14 |
| 31 | 28 | 40 | ..... | 155 | ..... | 60 | ..... | 24 | 18 | ..... |

NOTE.—Daily discharge Dec. 9, 1912 to Feb. 24, 1913, determined from rating curve poorly defined above 300 second-feet; May 28, to Sept. 30, 1913, from fairly well defined curves; Nov. 27 to Dec. 8, Pacific Light & Power Co.'s record used; Feb. 25 to May 27, 1913, by indirect method for shifting channels.

*Monthly discharge of San Gabriel River at headworks near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| December | 31 | 28 | 28.4 | 1,750 | B. |
| January | 132 | 28 | 46.2 | 2,840 | B. |
| February | 1,160 | 40 | 196 | 10,900 | C. |
| March | 250 | 130 | 176 | 10,800 | C. |
| April | 160 | 95 | 120 | 7,140 | B. |
| May | 90 | 60 | 77.4 | 4,760 | B. |
| June | 60 | 37 | 47.6 | 2,830 | B. |
| July | 37 | 24 | 28.0 | 1,720 | B. |
| August | 18 | 14 | 17.9 | 1,100 | B. |
| September | 18 | 14 | 17.2 | 1,020 | B. |
| The period | | | | 44,900 | |

## SAN GABRIEL RIVER NEAR AZUSA, CAL.

LOCATION.—In the NW. ¼ sec. 23, T. 1 N., R. 10 W., about 1,000 feet above road crossing at mouth of canyon, about one-half mile above Pacific Light & Power Co.'s power house, and 2 miles north of Azusa.

RECORDS AVAILABLE.—1894 to September 30, 1913.

DRAINAGE AREA—222 square miles.

GAGE.—Staff in two sections bolted to large bowlders on left bank installed December 13, 1912, about 1,000 feet above previous site at mouth of canyon; original datum not maintained.

CHANNEL.—Gravel and bowlders; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet below gage or by wading.

DIVERSIONS.—The power canal of the Pacific Light & Power Co. heads about 5 miles above the station. This water is not returned to the river. The new location of the station is above the tunnels and temporary diversions for irrigation mentioned in previous reports.

ACCURACY.—Discharge January 16–21 and February 8–14, 1913, estimated from discharge measurements and record at headworks station. Owing to change in channel results are only fair.

*Discharge measurements of San Gabriel River near Azusa, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 10 | F. C. Ebert | 3.07 | 54 | Mar. 4 | W. H. Spear | 3.59 | 137 |
| 11 | do | 2.98 | 25 | Apr. 2 | F. C. Ebert | 3.38 | 64 |
| 25 | do | 5.25 | 1,880 | 22 | H. D. McGlashan | 3.07 | 27 |
| Mar. 3 | do | 3.59 | 124 | May 7 | F. C. Ebert | 2.91 | 18 |

*Daily gage height, in feet, of San Gabriel River near Azusa, Cal., for the year ending Sept. 30, 1913.*

[J. G. Woodward, observer.]

| Day. | Jan. | Feb. | Mar. | Apr. | May. | Day. | Jan. | Feb. | Mar. | Apr. | May. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | 3.7 | 3.45 | 3.05 | 16 | 3.25 | ..... | 3.4 | 3.15 | ..... |
| 2 | ..... | ..... | 3.6 | 3.45 | 3.0 | 17 | 3.05 | ..... | 3.4 | 3.1 | ..... |
| 3 | ..... | ..... | 3.6 | 3.4 | 2.9 | 18 | 2.85 | ..... | 3.4 | 3.2 | ..... |
| 4 | ..... | ..... | 3.6 | 3.35 | 2.9 | 19 | 2.75 | ..... | 3.4 | 3.1 | ..... |
| 5 | ..... | ..... | 3.6 | 3.35 | 2.9 | 20 | 1.8 | ..... | 3.35 | 3.1 | ..... |
| 6 | ..... | ..... | 3.6 | 3.3 | 2.9 | 21 | .6 | ..... | 3.35 | 3.1 | ..... |
| 7 | ..... | ..... | 3.6 | 3.3 | 2.9 | 22 | ..... | ..... | 3.35 | 3.1 | ..... |
| 8 | ..... | 3.9 | 3.6 | 3.3 | 2.9 | 23 | ..... | ..... | 3.3 | 3.1 | ..... |
| 9 | ..... | 3.2 | 3.6 | 3.25 | 2.9 | 24 | ..... | 4.8 | 3.3 | 3.1 | ..... |
| 10 | ..... | 3.05 | 3.55 | 3.2 | 2.9 | 25 | ..... | 5.25 | 3.3 | 3.1 | ..... |
| 11 | ..... | 3.0 | 3.6 | 3.2 | 2.8 | 26 | ..... | 4.4 | 3.2 | ..... | ..... |
| 12 | ..... | 2.5 | 3.5 | 3.2 | 2.7 | 27 | ..... | 4.05 | 3.15 | 3.15 | ..... |
| 13 | ..... | 2.15 | 3.5 | 3.2 | 2.7 | 28 | ..... | 3.8 | 3.1 | 3.15 | ..... |
| 14 | ..... | 1.05 | 3.45 | 3.2 | 2.6 | 29 | ..... | ..... | 3.1 | 3.1 | ..... |
| 15 | ..... | ..... | 3.4 | 3.2 | 2.5 | 30 | ..... | ..... | 3.65 | 3.1 | ..... |
| | | | | | | 31 | ..... | ..... | 3.5 | ..... | ..... |

NOTE.—River dry or no water flowing on days for which no gage height is given, except Apr. 26, 1913, when gage was not read.

*Daily discharge, in second-feet, of San Gabriel River near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | Day. | Jan. | Fed. | Mar. | Apr. | May. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | 175 | 82 | 26 | 16 | 80 | ..... | 70 | 35 | ..... |
| 2 | ..... | ..... | 130 | 82 | 23 | 17 | 55 | ..... | 70 | 30 | ..... |
| 3 | ..... | ..... | 130 | 70 | 18 | 18 | 35 | ..... | 70 | 40 | ..... |
| 4 | ..... | ..... | 130 | 62 | 18 | 19 | 25 | ..... | 70 | 30 | ..... |
| 5 | ..... | ..... | 130 | 62 | 18 | 20 | 3 | ..... | 62 | 30 | ..... |
| 6 | ..... | ..... | 130 | 53 | 18 | 21 | ..... | ..... | 62 | 30 | ..... |
| 7 | ..... | ..... | 130 | 53 | 18 | 22 | ..... | ..... | 62 | 30 | ..... |
| 8 | ..... | 210 | 130 | 53 | 18 | 23 | ..... | ..... | 53 | 30 | ..... |
| 9 | ..... | 75 | 130 | 46 | 18 | 24 | ..... | 1,210 | 53 | 30 | ..... |
| 10 | ..... | 54 | 112 | 40 | 18 | 25 | ..... | 1,880 | 53 | 30 | ..... |
| 11 | ..... | 25 | 130 | 40 | 14 | 26 | ..... | 750 | 40 | 32 | ..... |
| 12 | ..... | 14 | 95 | 40 | 10 | 27 | ..... | 425 | 35 | 35 | ..... |
| 13 | ..... | 8 | 95 | 40 | 10 | 28 | ..... | 230 | 30 | 35 | ..... |
| 14 | ..... | ..... | 82 | 40 | 6 | 29 | ..... | ..... | 30 | 30 | ..... |
| 15 | ..... | ..... | 70 | 40 | 3 | 30 | ..... | ..... | 152 | 30 | ..... |
| | | | | | | 31 | ..... | ..... | 95 | ..... | ..... |

NOTE.—Daily discharge for period Feb. 24 to May 15, 1913, determined from a fairly well defined rating curve. Discharge Jan. 16 to 21 and Feb. 8 to 14 estimated from discharge measurements and record for San Gabriel River at headworks near Azusa. No flow on days for which discharge is not given.

*Monthly discharge of San Gabriel River near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 0 | 0 | 0 | 0 | |
| January | 80 | 0 | 6.4 | 394 | D. |
| February | 1,880 | 0 | 174 | 9,660 | C. |
| March | 175 | 30 | 90.5 | 5,560 | B. |
| April | 82 | 30 | 42.7 | 2,540 | B. |
| May | 26 | 0 | 7.6 | 467 | B. |
| June | 0 | 0 | 0 | 0 | |
| July | 0 | 0 | 0 | 0 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 1,880 | 0 | 25.8 | 18,600 | |

*Combined daily discharge, in second-feet, of San Gabriel River and Pacific Light & Power Co.'s canal near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 29 | 31 | 29 | 40 | 252 | 159 | 103 | 59 | 39 | 23 | 20 |
| 2 | 25 | 27 | 30 | 28 | 40 | 207 | 159 | 100 | 59 | 38 | 22 | 21 |
| 3 | 32 | 28 | 30 | 28 | 40 | 207 | 147 | 95 | 57 | 35 | 20 | 21 |
| 4 | 37 | 28 | 30 | 28 | 40 | 207 | 139 | 95 | 60 | 35 | 18 | 17 |
| 5 | 39 | 28 | 30 | 27 | 39 | 207 | 139 | 95 | 62 | 34 | 17 | 16 |
| 6 | 35 | 28 | 29 | 25 | 40 | 207 | 130 | 95 | 58 | 31 | 17 | 16 |
| 7 | 34 | 28 | 28 | 25 | 56 | 207 | 130 | 95 | 56 | 31 | 16 | 16 |
| 8 | 34 | 27 | 28 | 28 | 283 | 207 | 130 | 95 | 54 | 29 | 16 | 17 |
| 9 | 33 | 28 | 28 | 30 | 148 | 207 | 123 | 95 | 55 | 28 | 17 | 16 |
| 10 | 32 | 31 | 28 | 32 | 127 | 189 | 117 | 95 | 54 | 27 | 19 | 15 |
| 11 | 30 | 35 | 28 | 32 | 98 | 207 | 117 | 91 | 53 | 25 | 17 | 15 |
| 12 | 30 | 32 | 27 | 32 | 87 | 172 | 117 | 87 | 51 | 25 | 17 | 15 |
| 13 | 30 | 30 | 26 | 32 | 81 | 172 | 117 | 87 | 48 | 26 | 17 | 14 |
| 14 | 29 | 31 | 26 | 32 | 72 | 159 | 117 | 83 | 46 | 25 | 17 | 14 |
| 15 | 29 | 30 | 27 | 51 | 70 | 147 | 117 | 79 | 46 | 26 | 17 | 14 |
| 16 | 28 | 30 | 27 | 148 | 68 | 147 | 112 | 76 | 44 | 24 | 17 | 13 |
| 17 | 28 | 30 | 29 | 123 | 64 | 147 | 107 | 75 | 44 | 23 | 17 | 13 |
| 18 | 27 | 30 | 29 | 104 | 64 | 147 | 117 | 74 | 42 | 22 | 17 | 13 |
| 19 | 27 | 30 | 28 | 93 | 64 | 147 | 107 | 74 | 40 | 22 | 16 | 13 |
| 20 | 26 | 30 | 29 | 63 | 61 | 139 | 107 | 73 | 39 | 24 | 15 | 13 |
| 21 | 26 | 28 | 28 | 51 | 59 | 139 | 107 | 73 | 37 | 28 | 16 | 13 |
| 22 | 26 | 28 | 28 | 47 | 68 | 139 | 107 | 72 | 34 | 27 | 16 | 13 |
| 23 | 28 | 29 | 29 | 45 | 59 | 130 | 107 | 70 | 35 | 25 | 18 | 14 |
| 24 | 27 | 28 | 30 | 43 | 1,290 | 130 | 107 | 68 | 36 | 24 | 16 | 16 |
| 25 | 26 | 28 | 30 | 42 | 1,960 | 130 | 107 | 67 | 38 | 24 | 17 | 15 |
| 26 | 26 | 28 | 29 | 42 | 827 | 117 | 109 | 66 | 42 | 26 | 16 | 14 |
| 27 | 30 | 28 | 29 | 42 | 502 | 112 | 112 | 66 | 57 | 29 | 17 | 14 |
| 28 | 32 | 27 | 29 | 42 | 307 | 107 | 112 | 70 | 61 | 26 | 16 | 14 |
| 29 | 32 | 27 | 29 | 42 | ..... | 107 | 107 | 68 | 50 | 26 | 16 | 13 |
| 30 | 32 | 30 | 29 | 42 | ..... | 182 | 107 | 64 | 42 | 25 | 20 | 13 |
| 31 | 30 | ..... | 29 | 41 | ..... | 172 | ..... | 59 | ..... | 24 | 20 | ..... |

*Combined monthly discharge of San Gabriel River and Pacific Light & Power Co.'s canal near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 39 | 24 | 29.8 | 1,830 |
| November | 35 | 27 | 29.0 | 1,730 |
| December | 31 | 26 | 28.6 | 1,760 |
| January | 148 | 25 | 47.4 | 2,910 |
| February | 1,960 | 39 | 237 | 13,200 |
| March | 252 | 107 | 166 | 10,200 |
| April | 159 | 107 | 120 | 7,140 |
| May | 103 | 59 | 80.8 | 4,970 |
| June | 62 | 34 | 48.6 | 2,890 |
| July | 39 | 22 | 27.5 | 1,690 |
| August | 23 | 15 | 17.4 | 1,070 |
| September | 21 | 13 | 15.0 | 893 |
| The year | 1,960 | 13 | 69.4 | 50,300 |

## PACIFIC LIGHT & POWER CO.'S CANAL[1] NEAR AZUSA, CAL.

LOCATION.—At Pacific Light & Power Co.'s power house, about 1¾ miles north of Azusa.

RECORDS AVAILABLE.—1896 to September 30, 1913.

DISCHARGE.—Computed from records showing kilowatt output of plant except at low water, when record at power plant is not reliable. Low-water discharges are computed from weir records obtained at sand box, about one-fourth mile below intake.

ACCURACY.—In compiling these records it is considered that 1 second-foot develops 25 kilowatts. Results are good.

*Daily discharge, in second-feet, of Pacific & Light Power Co.'s canal near Azusa, Cal. for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 29 | 31 | 29 | 40 | 77 | 77 | 77 | 59 | 39 | 23 | 20 |
| 2 | 25 | 27 | 30 | 28 | 40 | 77 | 77 | 77 | 59 | 38 | 22 | 21 |
| 3 | 32 | 28 | 30 | 28 | 40 | 77 | 77 | 77 | 57 | 35 | 20 | 21 |
| 4 | 37 | 28 | 30 | 28 | 40 | 77 | 77 | 77 | 60 | 35 | 18 | 17 |
| 5 | 39 | 28 | 30 | 27 | 39 | 77 | 77 | 77 | 62 | 34 | 17 | 16 |
| 6 | 35 | 28 | 29 | 25 | 40 | 77 | 77 | 77 | 58 | 31 | 17 | 16 |
| 7 | 34 | 28 | 28 | 25 | 56 | 77 | 77 | 77 | 56 | 31 | 16 | 16 |
| 8 | 34 | 27 | 28 | 28 | 73 | 77 | 77 | 77 | 54 | 29 | 16 | 17 |
| 9 | 33 | 28 | 28 | 30 | 73 | 77 | 77 | 77 | 55 | 28 | 17 | 16 |
| 10 | 32 | 31 | 28 | 32 | 73 | 77 | 77 | 77 | 54 | 27 | 19 | 15 |
| 11 | 30 | 35 | 28 | 32 | 73 | 77 | 77 | 77 | 53 | 25 | 17 | 15 |
| 12 | 30 | 32 | 27 | 32 | 73 | 77 | 77 | 77 | 51 | 25 | 17 | 15 |
| 13 | 30 | 30 | 26 | 32 | 73 | 77 | 77 | 77 | 48 | 26 | 17 | 14 |
| 14 | 29 | 31 | 26 | 32 | 72 | 77 | 77 | 77 | 46 | 25 | 17 | 14 |
| 15 | 29 | 30 | 27 | 51 | 70 | 77 | 77 | 76 | 46 | 26 | 17 | 14 |
| 16 | 28 | 30 | 27 | 68 | 68 | 77 | 77 | 76 | 44 | 24 | 17 | 13 |
| 17 | 28 | 30 | 29 | 68 | 64 | 77 | 77 | 75 | 44 | 23 | 17 | 13 |
| 18 | 27 | 30 | 29 | 69 | 64 | 77 | 77 | 74 | 42 | 22 | 17 | 13 |
| 19 | 27 | 30 | 28 | 68 | 64 | 77 | 77 | 74 | 40 | 22 | 16 | 13 |
| 20 | 26 | 30 | 29 | 60 | 61 | 77 | 77 | 73 | 39 | 24 | 15 | 13 |
| 21 | 26 | 28 | 28 | 51 | 59 | 77 | 77 | 73 | 37 | 28 | 16 | 13 |
| 22 | 26 | 28 | 28 | 47 | 68 | 77 | 77 | 72 | 34 | 27 | 16 | 13 |
| 23 | 28 | 29 | 29 | 45 | 59 | 77 | 77 | 70 | 35 | 25 | 18 | 14 |
| 24 | 27 | 28 | 30 | 43 | 77 | 77 | 77 | 68 | 36 | 24 | 16 | 16 |
| 25 | 26 | 28 | 30 | 42 | 77 | 77 | 77 | 67 | 38 | 24 | 17 | 15 |
| 26 | 26 | 28 | 29 | 42 | 77 | 77 | 77 | 66 | 42 | 26 | 16 | 14 |
| 27 | 30 | 28 | 29 | 42 | 77 | 77 | 77 | 66 | 57 | 29 | 17 | 14 |
| 28 | 32 | 27 | 29 | 42 | 77 | 77 | 77 | 70 | 61 | 26 | 16 | 14 |
| 29 | 32 | 27 | 29 | 42 | ..... | 77 | 77 | 68 | 50 | 26 | 16 | 13 |
| 30 | 32 | 30 | 29 | 42 | ..... | 30 | 77 | 64 | 42 | 25 | 20 | 13 |
| 31 | 30 | ..... | 29 | 41 | ..... | 77 | ..... | 59 | ..... | 24 | 20 | ..... |

NOTE.—Mar. 30, 1913, water out of canal 6 a. m. to 7 p. m.; mean discharge for day estimated.

[1] Formerly known as San Gabriel power canal.

*Monthly discharge of Pacific Light & Power Co.'s canal near Azusa, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 39 | 24 | 29.8 | 1,830 |
| November | 35 | 27 | 29.0 | 1,730 |
| December | 31 | 26 | 28.6 | 1,760 |
| January | 69 | 25 | 41.0 | 2,520 |
| February | 77 | 39 | 63.1 | 3,500 |
| March | 77 | 30 | 75.5 | 4,640 |
| April | 77 | 77 | 77.0 | 4,580 |
| May | 77 | 59 | 73.2 | 4,500 |
| June | 62 | 34 | 48.6 | 2,890 |
| July | 39 | 22 | 27.5 | 1,690 |
| August | 23 | 15 | 17.4 | 1,070 |
| September | 21 | 13 | 15.0 | 893 |
| The year | 77 | 13 | 43.7 | 31,600 |

## LOS ANGELES RIVER BASIN.

### ARROYO SECO NEAR PASADENA, CAL.

LOCATION.—Near south line of sec. 30, T. 2 N., R. 12 W. (unsurveyed), in Angeles National Forest, just below trail crossing at forest ranger's station, about 3 miles above Devils Gate, and 5½ miles northwest of Pasadena.

RECORDS AVAILABLE.—December 1, 1910, to September 30, 1913 (incomplete).

DRAINAGE AREA.—16.4 square miles.

GAGE.—Staff in two sections fastened to an alder tree on right bank 300 feet southeast of ranger's cabin.

CHANNEL.—Solid rock and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

ACCURACY.—Results fair.

COOPERATION.—Gage-height record furnished by United States Forest Service.

*Discharge measurements of Arroyo Seco near Pasadena, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Dec. 24 | 3.23 | 1.4 | Mar. 5 | 3.51 | 14 | May 6 | 3.18 | 1.9 |
| Feb. 6 | 3.20 | 2.6 | Apr. 5 | 3.27 | 4.2 | 31 | 3.15 | 1.6 |
| 8 | 3.81 | 34 | | | | | | |

*Daily gage height, in feet, of Arroyo Seco near Pasadena, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.03 | 3.11 | ..... | 3.15 | ..... | 3.20 | 3.16 | 3.11 | 3.10 | 3.06 |
| 2 | 3.13 | 3.12 | 3.17 | 3.15 | ..... | ..... | 3.17 | 3.11 | 3.11 | 3.10 |
| 3 | 3.16 | 3.13 | 3.13 | 3.15 | 3.30 | 3.20 | 3.17 | 3.10 | 3.11 | 3.10 |
| 4 | 3.29 | 3.14 | 3.15 | 3.13 | ..... | 3.20 | 3.18 | 3.10 | 3.11 | 3.06 |
| 5 | 3.24 | 3.14 | 3.15 | 3.12 | 3.30 | 3.20 | 3.18 | 3.10 | 3.10 | 3.01 |
| 6 | 3.20 | 3.13 | 3.14 | 3.14 | 3.30 | 3.18 | 3.16 | 3.10 | 3.09 | 2.98 |
| 7 | 3.19 | 3.13 | 3.14 | 3.14 | 3.30 | 3.20 | ..... | 3.10 | 3.08 | ..... |
| 8 | 3.18 | 3.12 | 3.13 | 3.16 | ..... | ..... | 3.17 | 3.10 | 3.08 | 3.01 |
| 9 | 3.17 | 3.13 | 3.16 | ..... | ..... | ..... | 3.17 | 3.10 | 3.09 | 3.00 |
| 10 | 3.18 | 3.20 | ..... | 3.23 | ..... | 3.20 | 3.15 | 3.10 | 3.09 | 2.98 |
| 11 | 3.13 | 3.17 | ..... | 3.20 | ..... | 3.20 | 3.16 | 3.10 | 3.08 | 2.98 |
| 12 | 3.12 | 3.16 | 3.15 | 3.18 | 3.25 | 3.20 | 3.14 | 3.10 | 3.07 | ..... |
| 13 | 3.13 | 3.14 | ..... | 3.18 | 3.25 | ..... | 3.12 | 3.10 | 3.07 | ..... |
| 14 | 3.12 | 3.13 | 3.14 | 3.18 | 3.25 | 3.18 | 3.12 | 3.10 | 3.06 | ..... |
| 15 | 3.09 | 3.13 | 3.16 | 4.20 | ..... | ..... | 3.12 | 3.10 | 3.04 | ..... |
| 16 | 3.09 | 3.13 | 3.15 | 3.55 | 3.25 | 3.18 | 3.10 | 3.10 | 3.01 | ..... |
| 17 | 3.08 | 3.12 | 3.14 | 3.75 | ..... | 3.18 | 3.10 | 3.10 | 3.01 | ..... |
| 18 | 3.09 | 3.12 | 3.14 | 3.39 | ..... | 3.18 | 3.10 | 3.09 | 3.01 | ..... |
| 19 | 3.10 | 3.13 | 3.13 | ..... | 3.3 | 3.18 | 3.11 | 3.06 | 3.01 | ..... |
| 20 | 3.11 | ..... | 3.14 | ..... | 3.3 | 3.19 | 3.12 | 3.06 | ..... | ..... |
| 21 | 3.13 | 3.15 | 3.14 | ..... | 3.3 | 3.19 | 3.10 | 3.08 | ..... | ..... |
| 22 | 3.12 | 3.15 | 3.14 | ..... | ..... | 3.18 | 3.10 | 3.06 | 3.01 | ..... |
| 23 | 3.13 | 3.15 | 3.14 | ..... | 3.25 | 3.18 | 3.10 | 3.06 | 3.00 | ..... |
| 24 | 3.13 | 3.16 | 3.14 | ..... | ..... | 3.18 | 3.10 | 3.04 | 3.00 | 2.98 |
| 25 | 3.12 | 3.17 | ..... | ..... | ..... | 3.19 | 3.10 | 3.07 | 3.00 | 2.98 |
| 26 | 3.13 | 3.16 | 3.12 | ..... | 3.20 | 3.18 | 3.15 | 3.10 | ..... | 2.99 |
| 27 | 3.12 | 3.16 | 3.12 | ..... | 3.20 | 3.19 | 3.25 | 3.10 | 2.98 | 2.98 |
| 28 | 3.12 | 3.15 | 3.14 | ..... | 3.20 | 3.22 | 3.20 | 3.10 | 2.98 | 2.98 |
| 29 | 3.13 | ..... | 3.14 | ..... | ..... | 3.19 | 3.14 | ..... | 2.99 | 2.98 |
| 30 | 3.12 | ..... | 3.13 | ..... | 3.20 | 3.18 | 3.10 | 3.10 | 3.00 | 2.99 |
| 31 | 3.11 | ..... | 3.14 | ..... | ..... | 3.16 | ..... | 3.10 | 3.00 | ..... |

NOTE.—Jan. 19 to Apr. 2, no gage height record obtained by Forest Service; Sept. 12 to 23, water too low for gage readings.

*Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Cal., for the year ending Sept. 30, 1913.*

| | Oct. | Nov. | Dec. | Jan. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.5 | 0.8 | 0.7 | 5.0 | 2.5 | 1.9 | 1.2 | 1.0 | 0.7 |
| 2 | .6 | .5 | .8 | .7 | 5.0 | 2.5 | 2.0 | 1.2 | 1.2 | 1.0 |
| 3 | .8 | .6 | .6 | .7 | 5.0 | 2.5 | 2.0 | 1.0 | 1.2 | 1.0 |
| 4 | 2.8 | .6 | .7 | .6 | 5.0 | 2.5 | 2.2 | 1.0 | 1.2 | .7 |
| 5 | 1.8 | .6 | .7 | .5 | 5.0 | 2.5 | 2.2 | 1.0 | 1.0 | .3 |
| 6 | 1.0 | .6 | .6 | .6 | 5.0 | 2.2 | 1.9 | 1.0 | .9 | .2 |
| 7 | .9 | .6 | .6 | .6 | 5.0 | 2.5 | 2.0 | 1.0 | .8 | .2 |
| 8 | .9 | .5 | .6 | .8 | 4.8 | 2.5 | 2.0 | 1.0 | .8 | .3 |
| 9 | .8 | .6 | .8 | 1.2 | 4.5 | 2.5 | 2.0 | 1.0 | .9 | .2 |
| 10 | .9 | 1.0 | .8 | 1.6 | 4.3 | 2.5 | 1.8 | 1.0 | .9 | .2 |
| 11 | .6 | .8 | .7 | 1.0 | 4.0 | 2.5 | 1.9 | 1.0 | .8 | .2 |
| 12 | .5 | .8 | .7 | .9 | 3.8 | 2.5 | 1.6 | 1.0 | .8 | .1 |
| 13 | .6 | .6 | .6 | .9 | 3.8 | 2.4 | 1.3 | 1.0 | .8 | .1 |
| 14 | .5 | .6 | .6 | .9 | 3.8 | 2.2 | 1.3 | 1.0 | .7 | .1 |
| 15 | .4 | .6 | .8 | 72 | 3.8 | 2.2 | 1.3 | 1.0 | .5 | .1 |
| 16 | .4 | .6 | .7 | 16 | 3.8 | 2.2 | 1.0 | 1.0 | .3 | .1 |
| 17 | .4 | .5 | .6 | 30 | 4.2 | 2.2 | 1.0 | 1.0 | .3 | .1 |
| 18 | .4 | .5 | .6 | 8.2 | 4.6 | 2.2 | 1.0 | .9 | .3 | .1 |
| 19 | .4 | .6 | .6 | ..... | 5.0 | 2.2 | 1.2 | .7 | .3 | .1 |
| 20 | .5 | .6 | .6 | ..... | 5.0 | 2.4 | 1.3 | .7 | .3 | .1 |
| 21 | .6 | .7 | .6 | ..... | 5.0 | 2.4 | 1.0 | .8 | .3 | .1 |
| 22 | .5 | .7 | .6 | ..... | 4.4 | 2.2 | 1.0 | .7 | .3 | .1 |
| 23 | .6 | .7 | .6 | ..... | 3.8 | 2.2 | 1.0 | .7 | .2 | .1 |
| 24 | .6 | .8 | .6 | ..... | 3.4 | 2.2 | 1.0 | .5 | .2 | .2 |
| 25 | .5 | .8 | .6 | ..... | 2.9 | 2.4 | 1.0 | .8 | .2 | .2 |
| 26 | .6 | .8 | .5 | ..... | 2.5 | 2.2 | 1.8 | 1.0 | .2 | .2 |
| 27 | .5 | .8 | .5 | ..... | 2.5 | 2.4 | 3.8 | 1.0 | .2 | .2 |
| 28 | .5 | .7 | .6 | ..... | 2.5 | 3.0 | 2.5 | 1.0 | .2 | .2 |
| 29 | .6 | .7 | .6 | ..... | 2.5 | 2.4 | 1.6 | 1.0 | .2 | .2 |
| 30 | .5 | .8 | .6 | ..... | 2.5 | 2.2 | 1.0 | 1.0 | .2 | .2 |
| 31 | .5 | ..... | .6 | ..... | ..... | 1.9 | ..... | 1.0 | .2 | ..... |

NOTE.—Daily discharge determined from two fairly well defined rating curves applicable Oct. 1, 1912 to Jan. 15, 1913, and Jan. 16 to Sept. 30, 1913. Discharge estimated Sept. 12 to 23; discharge interpolated for other days for which record is not given.

*Monthly discharge of Arroyo Seco near Pasadena, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 2.8 | 0.3 | 0.69 | 42 | |
| November | 1.0 | .5 | .66 | 39 | |
| December | .8 | .5 | .64 | 39 | |
| January 1–18 | 72.0 | .5 | 7.66 | 273 | C. |
| April | 5.0 | 2.5 | 4.08 | 243 | C. |
| May | 3.0 | 1.9 | 2.36 | 145 | C. |
| June | 3.8 | 1.0 | 1.62 | 96 | D. |
| July | 1.2 | .5 | .94 | 58 | |
| August | 1.2 | .2 | .56 | 34 | |
| September | 1.0 | .1 | .25 | 15 | |

## SANTA CLARA RIVER BASIN.

### PIRU CREEK NEAR PIRU, CAL.

LOCATION.—Below suspension foot bridge in southern part of Temescal grant, in Santa Barbara National Forest, 2 miles above junction with Santa Clara River and about 1¾ miles northeast of Piru.

RECORDS AVAILABLE.—October 28, 1911, to September 5, 1913, when station was discontinued.

DRAINAGE AREA.—432 square miles.

GAGE.—Vertical staff in two sections fastened to cottonwood tree on right bank, about 300 feet below bridge.

CHANNEL.—Gravel and sand; shifting.

DISCHARGE MEASUREMENTS.—Made from railroad bridge 1 mile below gage, or by wading.

DIVERSIONS.—Water is diverted above the station through a 4-inch pipe for municipal supply at Piru.

ACCURACY.—Estimates of daily discharge computed from rating curves covering short periods and by indirect method for shifting channels. High-water estimates approximate; results for other stages fair.

*Discharge measurements of Piru Creek near Piru, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 11 | 2.88 | 9.7 | Feb. 27 | 4.05 | 483 | May 23 | 2.80 | 25 |
| Nov. 7 | 2.93 | 15 | Mar. 6 | 3.90 | 271 | June 5 | 3.03 | 48 |
| Dec. 4 | 2.74 | 16 | 9 | 4.00 | 281 | 24 | 2.62 | 17 |
| Jan. 6 | 2.71 | 11 | 31 | 3.55 | 140 | 26 | 2.63 | 20 |
| 8 | 2.72 | 13 | Apr. 2 | 3.66 | 158 | Aug. 13 | 2.40 | 5.6 |
| 29 | 4.23 | 28 | 28 | 3.76 | 55 | 17 | 2.43 | 7.4 |
| 31 | 4.22 | 25 | 30 | 3.22 | 51 | | | |
| Feb. 12 | 3.98 | 55 | May 21 | 2.82 | 24 | | | |

NOTE.—Gage-height record prior to May 4, 1913, not considered reliable.

*Daily gage height, in feet, of Piru Creek near Piru, Cal., for the year ending Sept. 30, 1913.*

[J. Y. Dominguez and John Sullivan, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.95 | 3.0 | 2.95 | 2.85 | 4.2 | 4.45 | 3.65 | ..... | 2.7 | 2.55 | 2.4 | 2.9 |
| 2 | 3.0 | 3.0 | 2.9 | 2.85 | 4.2 | 4.45 | 3.65 | 3.15 | 2.75 | 2.55 | 2.4 | ..... |
| 3 | 3.0 | 3.0 | 2.9 | 2.85 | 4.2 | 4.4 | 3.65 | 3.15 | 2.75 | 2.5 | 2.4 | 2.65 |
| 4 | 3.2 | 3.0 | 2.9 | 2.8 | 4.2 | 4.4 | 3.7 | 3.1 | 3.15 | 2.5 | 2.4 | ..... |
| 5 | 3.0 | 3.0 | 2.9 | 2.8 | 4.2 | 4.2 | 3.7 | 3.1 | 3.2 | 2.5 | 2.4 | 2.4 |
| 6 | 3.0 | 3.0 | 2.9 | 2.8 | 4.5 | 3.9 | 3.65 | 3.05 | 3.4 | 2.55 | 2.45 | ..... |
| 7 | 2.95 | 3.0 | 2.9 | 2.85 | 5.5 | 3.9 | 3.6 | 3.05 | 3.8 | 2.5 | 2.4 | ..... |
| 8 | 2.95 | 3.0 | 2.9 | 2.85 | 5.4 | 4.0 | 3.55 | 3.0 | 3.05 | 2.5 | 2.4 | ..... |
| 9 | 2.95 | 3.0 | 2.9 | 2.9 | 5.4 | 4.0 | 3.4 | 3.0 | 2.9 | 2.5 | 2.4 | ..... |
| 10 | 2.95 | 3.0 | 2.9 | 2.9 | 5.2 | 4.05 | 3.4 | 3.0 | 2.85 | 2.5 | 2.4 | ..... |
| 11 | 2.95 | 3.0 | 2.9 | 2.9 | 4.8 | 4.1 | 3.3 | 2.95 | 2.8 | 2.5 | 2.4 | ..... |
| 12 | 2.95 | 3.0 | 2.9 | 2.9 | 4.0 | 4.1 | 3.3 | 2.9 | 2.8 | 2.5 | ..... | ..... |
| 13 | 2.95 | 3.0 | 2.9 | 2.9 | 4.0 | 4.0 | 3.3 | 2.9 | 2.75 | 2.5 | 2.4 | ..... |
| 14 | 2.95 | 3.0 | 2.9 | 2.9 | 3.9 | 4.0 | 3.2 | 2.9 | 2.7 | 2.5 | ..... | ..... |
| 15 | 2.95 | 3.0 | 2.9 | 4.45 | 3.9 | 4.0 | 3.2 | 2.9 | 2.7 | 2.5 | ..... | ..... |
| 16 | 2.95 | 3.0 | 2.9 | 4.4 | 3.85 | 3.85 | 3.2 | 2.85 | 2.7 | 2.5 | ..... | ..... |
| 17 | 2.95 | 3.0 | 2.9 | 4.65 | 3.8 | 3.8 | 3.2 | 2.85 | 2.7 | 2.5 | 2.45 | ..... |
| 18 | 2.95 | 3.0 | 2.9 | 4.55 | 3.8 | 3.65 | 3.4 | 2.85 | 2.65 | 2.5 | 2.4 | ..... |
| 19 | 2.95 | 3.0 | 2.9 | 4.5 | 3.75 | 3.6 | 3.4 | 2.8 | 2.6 | 2.5 | ..... | ..... |
| 20 | 2.95 | 3.0 | 2.9 | 4.4 | 3.7 | 3.55 | 3.4 | 2.8 | 2.6 | 2.5 | 2.4 | ..... |
| 21 | 2.95 | 3.0 | 2.9 | 4.3 | 3.7 | 3.5 | 3.3 | 2.8 | 2.6 | 2.5 | ..... | ..... |
| 22 | 2.95 | 3.0 | 2.9 | 4.3 | 3.55 | 3.45 | 3.3 | 2.8 | 2.6 | 2.45 | 2.4 | ..... |
| 23 | 2.95 | 3.0 | 2.9 | 4.2 | 3.95 | 3.45 | 3.3 | 2.8 | 2.6 | 2.5 | ..... | ..... |
| 24 | 2.95 | 2.95 | 2.9 | 4.1 | 7.35 | 3.5 | 3.2 | 2.8 | 2.6 | 2.5 | ..... | ..... |
| 25 | 2.95 | 2.95 | 2.9 | 4.1 | 6.75 | 3.5 | 3.2 | 2.75 | 2.6 | 2.5 | 2.4 | ..... |
| 26 | 2.95 | 2.95 | 2.9 | 4.1 | 4.9 | 3.5 | 3.2 | 2.75 | 2.6 | 2.5 | ..... | ..... |
| 27 | 3.0 | 2.95 | 2.9 | 4.1 | 4.45 | 3.45 | 3.2 | 2.75 | 2.7 | 2.5 | 3.9 | ..... |
| 28 | 3.0 | 2.95 | 2.9 | 3.9 | 4.45 | 3.45 | 3.25 | 2.75 | 2.8 | 2.5 | ..... | ..... |
| 29 | 3.0 | 2.95 | 2.9 | 3.7 | ..... | 3.35 | 3.25 | ..... | 2.7 | 2.5 | 3.5 | ..... |
| 30 | 3.0 | 2.95 | 2.9 | 3.4 | ..... | 3.35 | 3.25 | 2.7 | 2.65 | 2.5 | ..... | ..... |
| 31 | 3.0 | ..... | 2.9 | 3.3 | ..... | 3.6 | ..... | 2.7 | ..... | 2.45 | ..... | ..... |

*Daily discharge, in second-feet, of Piru Creek near Piru, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 15 | 20 | 13 | 30 | 420 | 157 | 48 | 20 | 14 | 7 | 37 |
| 2 | 15 | 15 | 16 | 13 | 30 | 390 | 157 | 44 | 27 | 14 | 7 | 28 |
| 3 | 15 | 15 | 16 | 13 | 35 | 360 | 154 | 43 | 29 | 11 | 7 | 19 |
| 4 | 30 | 15 | 16 | 11 | 40 | 330 | 150 | 41 | 60 | 11 | 7 | 13 |
| 5 | 15 | 15 | 16 | 11 | 45 | 300 | 146 | 40 | 67 | 11 | 7 | 7 |
| 6 | 15 | 15 | 16 | 11 | 85 | 271 | 142 | 38 | 91 | 14 | 9 | ..... |
| 7 | 10 | 15 | 16 | 13 | 260 | 270 | 138 | 37 | 148 | 11 | 7 | ..... |
| 8 | 10 | 15 | 16 | 13 | 200 | 280 | 134 | 34 | 51 | 11 | 7 | ..... |
| 9 | 10 | 15 | 16 | 16 | 255 | 281 | 130 | 34 | 37 | 11 | 7 | ..... |
| 10 | 10 | 25 | 16 | 16 | 225 | 274 | 126 | 33 | 33 | 11 | 7 | ..... |
| 11 | 10 | 25 | 16 | 16 | 165 | 268 | 122 | 31 | 29 | 11 | 7 | ..... |
| 12 | 10 | 25 | 16 | 16 | 55 | 262 | 118 | 29 | 29 | 11 | 7 | ..... |
| 13 | 10 | 25 | 16 | 16 | 55 | 256 | 114 | 29 | 26 | 11 | 7 | ..... |
| 14 | 10 | 25 | 16 | 16 | 45 | 250 | 110 | 28 | 22 | 11 | 7 | ..... |
| 15 | 10 | 25 | 16 | 250 | 45 | 244 | 106 | 28 | 22 | 11 | 7 | ..... |
| 16 | 10 | 25 | 16 | 220 | 40 | 238 | 102 | 26 | 22 | 11 | 7 | ..... |
| 17 | 10 | 25 | 16 | 250 | 35 | 232 | 98 | 26 | 22 | 11 | 9 | ..... |
| 18 | 10 | 25 | 16 | 215 | 35 | 226 | 94 | 26 | 19 | 11 | 7 | ..... |
| 19 | 10 | 25 | 16 | 190 | 30 | 220 | 90 | 25 | 16 | 11 | 7 | ..... |
| 20 | 10 | 25 | 16 | 155 | 25 | 214 | 86 | 25 | 16 | 11 | 7 | ..... |
| 21 | 10 | 25 | 16 | 125 | 25 | 208 | 82 | 24 | 16 | 11 | 7 | ..... |
| 22 | 10 | 25 | 16 | 110 | 20 | 202 | 78 | 24 | 16 | 9 | 7 | ..... |
| 23 | 10 | 25 | 16 | 85 | 50 | 196 | 74 | 25 | 16 | 11 | 7 | ..... |
| 24 | 10 | 20 | 16 | 60 | 1,250 | 190 | 70 | 25 | 16 | 11 | 7 | ..... |
| 25 | 10 | 20 | 16 | 50 | 1,100 | 184 | 66 | 23 | 16 | 11 | 7 | ..... |
| 26 | 10 | 20 | 16 | 42 | 650 | 178 | 62 | 22 | 16 | 11 | 7 | ..... |
| 27 | 15 | 20 | 16 | 35 | 483 | 172 | 58 | 22 | 22 | 11 | 165 | ..... |
| 28 | 15 | 20 | 16 | 32 | 450 | 166 | 55 | 21 | 29 | 11 | 130 | ..... |
| 29 | 15 | 20 | 16 | 28 | ..... | 160 | 53 | 20 | 22 | 11 | 104 | ..... |
| 30 | 15 | 20 | 16 | 26 | ..... | 154 | 51 | 20 | 19 | 11 | 82 | ..... |
| 31 | 15 | ..... | 16 | 25 | ..... | 148 | ..... | 20 | ..... | 9 | 59 | ..... |

NOTE.—Daily discharge Oct. 1, 1912, to June 4, 1913, determined by interpolation between discharge measurements and study of observer's weather notes and by indirect method for shifting channels; accuracy only approximate. Discharge June 5 to Sept. 30, 1913, determined from a rating curve well defined below 100 second-feet.

*Monthly discharge of Piru Creek near Piru, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | | | 12.1 | 744 | |
| November | | | 20.8 | 1,240 | |
| December | | | 16.1 | 990 | |
| January | 250 | 11 | 67.5 | 4,150 | |
| February | 1,250 | 20 | 206 | 11,400 | |
| March | 420 | 148 | 243 | 14,900 | |
| April | 157 | 51 | 104 | 6,190 | |
| May | 48 | 20 | 29.4 | 1,810 | B. |
| June | 148 | 16 | 32.5 | 1,930 | B. |
| July | 14 | 9 | 11.2 | 689 | B. |
| August | 165 | 7 | 23.4 | 1,440 | B. |
| September 1-5 | 37 | 7 | 20.8 | 206 | B. |
| The period | | | | 45,700 | |

NOTE.—Estimates October, 1912, to April, 1913, approximate.

## SESPE CREEK AT SESPE, CAL.

LOCATION.—In the NW. ¼ sec. 25, T. 4 N., R. 20 W., at Southern Pacific Co.'s bridge 1½ miles above junction with Santa Clara River and half a mile southeast of Sespe.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Inclined staff in two sections on left bank at bridge. A new gage, consisting of a vertical staff in two sections, was installed January 7, 1913. Lower section is bolted to bowlder in center of channel just below bridge; upper section is bolted to left abutment of bridge. Original datum has been maintained.

CHANNEL.—Gravel; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from railroad bridge or by wading.

DIVERSIONS.—The Fillmore Irrigation Co.'s canal, which takes out about 4 miles above the station, furnishes water for irrigation and domestic uses at Sespe and Fillmore.

ACCURACY.—Rating curve well defined for medium and low stages. High water estimates approximate; otherwise record is good.

*Discharge measurements of Sespe Creek at Sespe, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Dec. 4 | 3.77 | 1.2 | Feb. 27 | 5.68 | 761 | May 21 | 3.58 | 14 |
| Jan. 7 | 3.74 | 1.3 | Mar. 7 | 5.17 | 417 | June 5 | 3.53 | 10 |
| 29 | 4.38 | 20 | Apr. 2 | 4.28 | 89 | 25 | 3.32 | 4.1 |
| Feb. 12 | 4.80 | 62 | 29 | 3.98 | 49 | Aug. 13 | | Dry. |

NOTE.—Dec. 4, 1912, point of zero flow determined to be at gage height about 3.3 feet.

*Daily gage height, in feet, of Sespe Creek at Sespe, Cal., for the year ending Sept. 30, 1913.*

[Edward Perkins, observer.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 3.80 | 3.84 | 4.38 | 5.10 | 4.22 | 3.93 | 3.45 | 3.00 |
| 2 | ..... | 3.82 | 3.80 | 4.38 | 5.00 | 4.22 | 3.90 | 3.45 | ..... |
| 3 | ..... | 3.82 | 3.64 | 4.38 | 5.00 | 4.22 | 3.90 | 3.50 | ..... |
| 4 | ..... | 3.84 | 3.62 | 4.38 | 5.10 | 4.22 | 3.90 | 3.50 | ..... |
| 5 | ..... | 3.76 | 3.80 | 4.38 | 5.20 | 4.22 | 3.90 | 3.50 | ..... |
| 6 | ..... | 3.82 | 3.76 | 4.39 | 5.12 | 4.22 | 3.90 | 3.80 | ..... |
| 7 | ..... | 3.84 | 3.72 | 4.40 | 5.15 | 4.20 | 4.00 | 3.70 | ..... |
| 8 | ..... | 3.82 | 3.70 | 6.40 | 5.10 | 4.20 | 3.90 | 3.60 | ..... |
| 9 | ..... | 3.82 | 3.80 | 5.40 | 5.00 | 4.15 | 3.90 | 3.50 | ..... |
| 10 | ..... | 3.84 | 3.90 | 5.12 | 4.90 | 4.15 | 3.80 | 3.50 | ..... |
| 11 | 3.90 | 3.84 | 4.00 | 4.90 | 4.90 | 4.12 | 3.80 | 3.50 | ..... |
| 12 | 3.36 | 3.84 | 4.02 | 4.80 | 4.85 | 4.12 | 3.72 | 3.50 | ..... |
| 13 | ..... | 3.84 | 3.95 | 4.72 | 4.72 | 4.10 | 3.70 | 3.50 | ..... |
| 14 | ..... | 3.84 | 4.10 | 4.68 | 4.65 | 4.15 | 3.70 | 3.40 | ..... |
| 15 | ..... | 4.00 | 5.90 | 4.62 | 4.52 | 4.15 | 3.65 | 3.40 | ..... |
| 16 | ..... | 3.95 | 6.40 | 4.60 | 4.50 | 4.15 | 3.62 | 3.30 | ..... |
| 17 | ..... | 3.90 | 5.40 | 4.58 | 4.50 | 4.12 | 3.62 | 3.30 | ..... |
| 18 | 3.52 | 3.84 | 5.40 | 4.56 | 4.60 | 4.12 | 3.60 | 3.30 | ..... |
| 19 | 3.50 | 3.90 | 5.00 | 4.54 | 4.50 | 4.10 | 3.60 | 3.20 | ..... |
| 20 | 3.70 | 3.90 | 4.80 | 4.54 | 4.50 | 4.10 | 3.60 | 3.20 | ..... |
| 21 | 3.90 | 3.90 | 4.60 | 4.70 | 4.50 | 3.98 | 3.55 | 3.20 | ..... |
| 22 | 3.95 | 3.90 | 4.55 | 4.50 | 4.50 | 3.98 | ..... | 3.20 | ..... |
| 23 | 3.78 | 3.90 | 4.52 | 5.00 | 4.40 | 3.95 | 3.50 | 3.20 | ..... |
| 24 | 3.70 | 3.90 | 4.50 | 9.75 | 4.40 | 3.95 | 3.50 | 3.20 | ..... |
| 25 | 3.78 | 3.90 | 4.42 | 8.00 | 4.40 | 3.98 | 3.50 | 3.10 | ..... |
| 26 | 3.76 | 3.90 | 4.40 | 6.00 | 4.35 | 4.00 | 3.50 | 3.20 | ..... |
| 27 | 3.76 | 3.90 | 4.40 | 6.50 | 4.35 | 3.98 | 3.50 | 3.60 | ..... |
| 28 | 3.78 | 3.84 | 4.38 | 5.20 | 4.30 | 3.95 | 3.50 | 3.40 | ..... |
| 29 | 3.82 | 3.90 | 4.38 | ..... | 4.30 | 3.98 | 3.50 | 3.40 | ..... |
| 30 | 3.82 | 3.90 | 4.38 | ..... | 4.25 | 3.95 | 3.50 | 3.40 | ..... |
| 31 | ..... | 3.90 | 4.38 | ..... | 4.25 | ..... | 3.50 | ..... | ..... |

NOTE.—Maximum recorded gage height Feb. 24, 10.5 feet at 2.30 p. m. Creek dry Oct. 1 to Nov. 10, Nov. 13 to 17, 1912, and July 2 to Sept. 30, 1913.

*Daily discharge, in second-feet, of Sespe Creek at Sespe, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.5 | 2.0 | 20 | 380 | 81 | 44 | 7.5 | 0.7 |
| 2 | ..... | 2 | 1.5 | 20 | 335 | 81 | 40 | 7.5 | ..... |
| 3 | ..... | 2 | .7 | 20 | 335 | 81 | 40 | 9.5 | ..... |
| 4 | ..... | 2 | .6 | 20 | 380 | 81 | 40 | 9.5 | ..... |
| 5 | ..... | 1.5 | 1.5 | 20 | 430 | 81 | 40 | 9.5 | ..... |
| 6 | ..... | 2 | 1.5 | 21 | 390 | 81 | 40 | 30 | ..... |
| 7 | ..... | 2 | 1 | 21 | 405 | 78 | 52 | 21 | ..... |
| 8 | ..... | 2 | .9 | 1,700 | 380 | 78 | 40 | 14 | ..... |
| 9 | ..... | 2 | 1.5 | 200 | 335 | 71 | 40 | 9.5 | ..... |
| 10 | ..... | 2 | 3 | 122 | 290 | 71 | 30 | 9.5 | ..... |
| 11 | 3.0 | 2 | 4.5 | 80 | 290 | 67 | 30 | 9.5 | ..... |
| 12 | ..... | 2 | 5 | 65 | 268 | 67 | 23 | 9.5 | ..... |
| 13 | ..... | 2 | 3.5 | 53 | 213 | 64 | 21 | 9.5 | ..... |
| 14 | ..... | 2 | 7.5 | 48 | 187 | 71 | 21 | 6 | ..... |
| 15 | ..... | 4.5 | 620 | 40 | 146 | 71 | 18 | 6 | ..... |
| 16 | ..... | 3.5 | 1,700 | 38 | 140 | 71 | 16 | 4 | ..... |
| 17 | ..... | 3 | 200 | 36 | 140 | 67 | 16 | 4 | ..... |
| 18 | .3 | 2 | 200 | 34 | 170 | 67 | 14 | 4 | ..... |
| 19 | .2 | 3 | 98 | 33 | 140 | 64 | 14 | 2.5 | ..... |
| 20 | .9 | 3 | 65 | 33 | 140 | 64 | 14 | 2.5 | ..... |
| 21 | 3.0 | 3 | 38 | 50 | 140 | 50 | 12 | 2.5 | ..... |
| 22 | 3.5 | 3 | 34 | 29 | 140 | 50 | 11 | 2.5 | ..... |
| 23 | 1.5 | 3 | 31 | 98 | 115 | 46 | 9.5 | 2.5 | ..... |
| 24 | .9 | 3 | 29 | 16,300 | 115 | 46 | 9.5 | 2.5 | ..... |
| 25 | 1.5 | 3 | 23 | 8,200 | 115 | 50 | 9.5 | 1.5 | ..... |
| 26 | 1.5 | 3 | 21 | 1,220 | 104 | 52 | 9.5 | 2.5 | ..... |
| 27 | 1.5 | 3 | 21 | 2,480 | 104 | 50 | 9.5 | 14 | ..... |
| 28 | 1.5 | 2 | 20 | 430 | 94 | 46 | 9.5 | 6 | ..... |
| 29 | 2 | 3 | 20 | ..... | 94 | 50 | 9.5 | 6 | ..... |
| 30 | 2 | 3 | 20 | ..... | 86 | 46 | 9.5 | 6 | ..... |
| 31 | ..... | 3 | 20 | ..... | 86 | ..... | 9.5 | ..... | ..... |

NOTE.—Daily discharge determined from well-defined rating curves applicable as follows: Nov. 11, 1912, to Feb. 24, 1913; Feb. 25 to Sept. 30, 1913. Discharge Feb. 24 and 25 estimated from extension of rating curve; accuracy only approximate.

*Monthly discharge of Sespe Creek at Sespe, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0.0 | 0.0 | 0.00 | 0 | |
| November | 3.5 | .0 | .78 | 46 | |
| December | 4.5 | 1.5 | 2.52 | 155 | C. |
| January | 1,700 | .6 | 103 | 6,330 | B. |
| February | 16,300 | 20 | 1,120 | 62,200 | C. |
| March | 430 | 86 | 216 | 13,300 | A. |
| April | 81 | 46 | 64.8 | 3,860 | A. |
| May | 52 | 9.5 | 22.6 | 1,390 | A. |
| June | 30 | 1.5 | 7.70 | 458 | B. |
| July | .7 | .0 | .02 | 1 | |
| August | .0 | .0 | .00 | 0 | |
| September | .0 | .0 | .00 | 0 | |
| The year | 16,300 | .0 | 121 | 87,700 | |

## SANTA PAULA CREEK NEAR SANTA PAULA, CAL.

LOCATION.—Just below mouth of Sisar Creek, at east boundary of Ojai grant, in Santa Barbara National Forest, 6 miles above junction with Santa Clara River, and about 5½ miles northwest of Santa Paula.

RECORDS AVAILABLE.—March 24, 1912, to September 30, 1913, when the station was discontinued.

DRAINAGE AREA.—33.4 square miles.

GAGE.—Vertical staff fastened to tree on left bank about 600 feet below mouth of Sisar Creek.

CHANNEL.—Bowlders and gravel; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from highway bridge 1 mile below gage or by wading.

ACCURACY.—Rating curve fairly well defined for low and medium stages; high-water estimates approximate.

*Discharge measurements of Santa Paula Creek near Santa Paula, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Dec. 3 | 2.33 | 2.9 | Mar. 7 | 3.80 | 66 | June 5 | 3.07 | 7.4 |
| Jan. 31 | 2.42 | 5.2 | Apr. 30 | 3.26 | 13 | 24 | 3.11 | 5.3 |
| Mar. 1 | 3.92 | 83 | May 22 | 3.26 | 7.5 | Aug. 13 | 2.97 | 2.6 |

*Daily gage height, in feet, of Santa Paula Creek near Santa Paula, Cal., for the year ending Sept. 30, 1913.*

[F. J. Smith, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.28 | 2.28 | 2.30 | 2.28 | 2.42 | 3.9 | 3.3 | 3.25 | ..... | ..... | ..... | ..... |
| 2 | 2.28 | 2.30 | 2.30 | 2.28 | 2.42 | 3.9 | 3.3 | 3.25 | ..... | ..... | ..... | ..... |
| 3 | 2.30 | 2.30 | 2.30 | 2.28 | 2.45 | 3.9 | 3.3 | 3.25 | ..... | ..... | ..... | ..... |
| 4 | 2.30 | 2.30 | 2.30 | 2.28 | 2.45 | 3.8 | 3.3 | 3.2 | ..... | ..... | ..... | ..... |
| 5 | 2.30 | 2.30 | 2.30 | 2.28 | 2.45 | 3.8 | 3.3 | 3.2 | 3.07 | ..... | ..... | ..... |
| 6 | 2.30 | 2.28 | 2.30 | 2.28 | 2.45 | 3.8 | 3.3 | 3.2 | ..... | ..... | ..... | ..... |
| 7 | 2.30 | 2.28 | 2.30 | 2.30 | 2.45 | 3.8 | 3.3 | 3.2 | ..... | ..... | ..... | ..... |
| 8 | 2.30 | 2.28 | 2.30 | 2.30 | 2.60 | 3.7 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 9 | 2.28 | 2.28 | 2.32 | 2.40 | 2.60 | 3.7 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 10 | 2.28 | 2.28 | 2.32 | 2.40 | 2.60 | 3.7 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 11 | 2.28 | 2.30 | 2.32 | 2.40 | 2.60 | 3.7 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 12 | 2.28 | 2.30 | 2.32 | 2.40 | 2.60 | 3.6 | 3.32 | 3.2 | ..... | ..... | ..... | ..... |
| 13 | 2.28 | 2.30 | 2.30 | 2.40 | 2.60 | 3.6 | 3.35 | 3.2 | ..... | ..... | 2.97 | ..... |
| 14 | 2.28 | 2.30 | 2.30 | 2.40 | 2.60 | 3.6 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 15 | 2.28 | 2.30 | 2.30 | 4.30 | 2.55 | 3.5 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 16 | 2.28 | 2.30 | 2.30 | 2.80 | 2.55 | 3.5 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 17 | 2.28 | 2.30 | 2.30 | 2.90 | 2.50 | 3.5 | 3.35 | 3.2 | ..... | ..... | ..... | ..... |
| 18 | 2.28 | 2.30 | 2.30 | 2.80 | 2.50 | 3.5 | 3.4 | ..... | ..... | ..... | ..... | ..... |
| 19 | 2.28 | 2.30 | 2.30 | 2.80 | 2.50 | 3.5 | 3.4 | ..... | ..... | ..... | ..... | ..... |
| 20 | ..... | 2.30 | 2.30 | 2.70 | 2.50 | 3.5 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 21 | 2.28 | 2.30 | 2.30 | 2.70 | 2.50 | 3.5 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 22 | 2.28 | 2.30 | 2.30 | 2.60 | 2.50 | 3.5 | 3.3 | 3.26 | ..... | ..... | ..... | ..... |
| 23 | 2.28 | 2.32 | 2.30 | 2.50 | 2.60 | 3.5 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 24 | 2.28 | 2.30 | 2.35 | 2.45 | 9.00 | 3.5 | 3.3 | ..... | 3.11 | ..... | ..... | ..... |
| 25 | 2.28 | 2.30 | 2.38 | 2.40 | 5.90 | 3.5 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 26 | 2.28 | 2.3 | 2.28 | 2.40 | 4.50 | 3.4 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 27 | 2.28 | 2.30 | 2.30 | 2.40 | 4.50 | 3.2 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 28 | 2.28 | 2.30 | 2.30 | 2.40 | 4.40 | 3.2 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 29 | 2.28 | 2.30 | 2.28 | 2.40 | ..... | 3.2 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 30 | 2.20 | 2.30 | 2.28 | 2.40 | ..... | 3.2 | 3.3 | ..... | ..... | ..... | ..... | ..... |
| 31 | 2.20 | ..... | 2.30 | 2.42 | ..... | 3.2 | ..... | ..... | ..... | ..... | ..... | ..... |

NOTE.—Observer's low-water gage heights May 18 to Sept. 30 are unreliable; gage heights given during this period are those read by hydrographer.

*Daily discharge, in second-feet, of Santa Paula Creek, near Santa Paula, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.5 | 2.5 | 2.5 | 2.5 | 5.5 | 80 | 16 | 13 | 7.5 | 5 | 3 | 2 |
| 2 | 2.5 | 2.5 | 2.5 | 2.5 | 5.5 | 80 | 16 | 13 | 7.5 | 5 | 3 | 2 |
| 3 | 2.5 | 2.5 | 2.5 | 2.5 | 6.5 | 80 | 16 | 13 | 7.5 | 5 | 3 | 2 |
| 4 | 2.5 | 2.5 | 2.5 | 2.5 | 6.5 | 67 | 16 | 10 | 7.5 | 5 | 3 | 2 |
| 5 | 2.5 | 2.5 | 2.5 | 2.5 | 6.5 | 67 | 16 | 10 | 7.5 | 4.5 | 3 | 2 |
| 6 | 2.5 | 2.5 | 2.5 | 2.5 | 6.5 | 67 | 16 | 10 | 7.5 | 4.5 | 3 | 2 |
| 7 | 2.5 | 2.5 | 2.5 | 2.5 | 6.5 | 67 | 16 | 10 | 7.5 | 4.5 | 2.5 | 2 |
| 8 | 2.5 | 2.5 | 2.5 | 2.5 | 12 | 54 | 19 | 10 | 7.5 | 4.5 | 2.5 | 2 |
| 9 | 2.5 | 2.5 | 3 | 5 | 12 | 54 | 19 | 10 | 7 | 4.5 | 2.5 | 2 |
| 10 | 2.5 | 2.5 | 3 | 5 | 12 | 54 | 19 | 10 | 7 | 4.5 | 2.5 | 2 |
| 11 | 2.5 | 2.5 | 3 | 5 | 12 | 54 | 19 | 10 | 7 | 4.5 | 2.5 | 2 |
| 12 | 2.5 | 2.5 | 3 | 5 | 12 | 42 | 17 | 10 | 7 | 4.5 | 2.5 | 2 |
| 13 | 2.5 | 2.5 | 2.5 | 5 | 12 | 42 | 19 | 10 | 6.5 | 4 | 2.5 | 2 |
| 14 | 2.5 | 2.5 | 2.5 | 5 | 12 | 42 | 19 | 10 | 6.5 | 4 | 2.5 | 2 |
| 15 | 2.5 | 2.5 | 2.5 | 187 | 10 | 32 | 19 | 10 | 6.5 | 4 | 2.5 | 2 |
| 16 | 2.5 | 2.5 | 2.5 | 22 | 10 | 32 | 19 | 10 | 6.5 | 4 | 2.5 | 2 |
| 17 | 2.5 | 2.5 | 2.5 | 28 | 8 | 32 | 19 | 10 | 6 | 4 | 2.5 | 2 |
| 18 | 2.5 | 2.5 | 2.5 | 22 | 8 | 32 | 23 | 9 | 6 | 4 | 2.5 | 2 |
| 19 | 2.5 | 2.5 | 2.5 | 22 | 8 | 32 | 23 | 9 | 6 | 4 | 2.5 | 2 |
| 20 | 2.5 | 2.5 | 2.5 | 17 | 8 | 32 | 16 | 8 | 6 | 4 | 2.5 | 2 |
| 21 | 2.5 | 2.5 | 2.5 | 17 | 8 | 32 | 16 | 8 | 5.5 | 3.5 | 2.5 | 2 |
| 22 | 2.5 | 2.5 | 2.5 | 12 | 8 | 32 | 16 | 7.5 | 5.5 | 3.5 | 2.5 | 2 |
| 23 | 2.5 | 3 | 2.5 | 8 | 12 | 32 | 16 | 7.5 | 5.5 | 3.5 | 2.5 | 2 |
| 24 | 2.5 | 2.5 | 4 | 6.5 | 1,560 | 32 | 16 | 7.5 | 5.5 | 3.5 | 2.5 | 2 |
| 25 | 2.5 | 2.5 | 4.5 | 5 | 490 | 32 | 16 | 7.5 | 5.5 | 3.5 | 2.5 | 2 |
| 26 | 2.5 | 2.5 | 2.5 | 5 | 168 | 23 | 16 | 7.5 | 5.5 | 3.5 | 2.5 | 2 |
| 27 | 2.5 | 2.5 | 2.5 | 5 | 168 | 10 | 16 | 7.5 | 5 | 3.5 | 2.5 | 2 |
| 28 | 2.5 | 2.5 | 2.5 | 5 | 152 | 10 | 16 | 7.5 | 5 | 3.5 | 2.5 | 2 |
| 29 | 2.5 | 2.5 | 2.5 | 5 | ..... | 10 | 16 | 7.5 | 5 | 3 | 2.5 | 2 |
| 30 | 1.5 | 2.5 | 2.5 | 5 | ..... | 10 | 16 | 7.5 | 5 | 3 | 2.5 | 2 |
| 31 | 1.5 | ..... | 2.5 | 5.5 | ..... | 10 | ..... | 7.5 | ..... | 3 | 2.5 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1, 1912, to Feb. 23, 1913, fairly well defined below 80 second-feet; Feb. 26 to May 17, fairly well defined. Discharge Feb. 24 and 25, estimated.

*Monthly discharge of Santa Paula Creek, near Santa Paula, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 2.5 | 1.5 | 2.44 | 150 | C. |
| November | 3.0 | 2.5 | 2.52 | 150 | C. |
| December | 4.5 | 2.5 | 2.53 | 156 | C. |
| January | 187 | 2.5 | 13.4 | 824 | B. |
| February | 1,560 | 5.5 | 98.1 | 5,450 | C. |
| March | 80 | 10 | 34.2 | 2,100 | B. |
| April | 23 | 16 | 17.4 | 1,040 | B. |
| May | 13 | 7.5 | 9.29 | 571 | C. |
| June | 7.5 | 5.0 | 6.37 | 379 | C. |
| July | 5.0 | 3.0 | 4.13 | 254 | C. |
| August | 3.0 | 2.5 | 2.60 | 160 | C. |
| September | 2.0 | 2.0 | 2.00 | 119 | D. |
| The year | 1,560 | 1.5 | 15.7 | 11,400 | |

## VENTURA RIVER BASIN.

### VENTURA RIVER NEAR NORDHOFF, CAL.

LOCATION.—In the N. ½ SW. ¼ sec. 28, T. 5 N., R. 23 W., just below junction of Matilija and North Fork of Matilija creeks, about 4 miles northwest of Nordhoff.

RECORDS AVAILABLE.—October 23, 1911, to September 30, 1913.

DRAINAGE AREA.—19.9 square miles.

GAGE.—Vertical staff in three sections on right bank about 300 feet below junction of creeks.

CHANNEL.—Gravel and bowlders; shifts during high water.

DISCHARGE MEASUREMENTS.—Made from cable about 200 feet below gage or by wading.

DIVERSIONS.—Sheldon flume diverts water from North Fork of Matilija Creek, above the station, during the irrigation season. See miscellaneous measurements for discharge of flume.

ACCURACY.—Results good at medium and low stages; rating curve not well defined for high water.

*Discharge measurements of Ventura River near Nordhoff, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 8 | 1.90 | 4.1 | Feb. 28 | 4.54 | 183 | May 22 | 2.62 | 13 |
| Dec. 2 | 1.93 | 5.0 | Mar. 8 | 3.86 | 95 | June 25 | 2.40 | 7.8 |
| Jan. 30 | 2.28 | 11 | Apr. 28 | 2.83 | 20 | Aug. 14 | 2.07 | 4.0 |

*Daily gage height, in feet, of Ventura River near Nordhoff, Cal., for the year ending Sept. 30, 1913.*

[P. W. Soper, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.80 | 1.88 | 1.90 | 1.98 | 2.25 | 4.45 | 3.2 | 2.82 | 2.58 | 2.40 | 2.20 | 2.00 |
| 2 | 1.82 | 1.90 | 1.92 | 1.98 | 2.25 | 4.35 | 3.1 | 2.82 | 2.58 | 2.38 | 2.20 | 2.00 |
| 3 | 1.88 | 1.90 | 1.92 | 1.98 | 2.25 | 4.15 | 3.0 | 2.82 | 2.55 | 2.38 | 2.20 | 2.00 |
| 4 | 1.90 | 1.90 | 1.92 | 1.98 | 2.25 | 4.0 | 3.0 | 2.82 | 2.55 | 2.35 | 2.20 | 2.00 |
| 5 | 1.90 | 1.90 | 1.92 | 1.98 | 2.25 | 3.9 | 3.0 | 2.82 | 2.55 | 2.32 | 2.20 | 2.00 |
| 6 | 1.90 | 1.90 | 1.92 | 1.98 | 2.25 | 3.85 | 3.0 | 2.82 | 2.55 | 2.30 | 2.18 | 2.00 |
| 7 | 1.90 | 1.90 | 1.92 | 1.98 | 2.65 | 3.85 | 3.0 | 2.80 | 2.55 | 2.30 | 2.18 | 2.00 |
| 8 | 1.90 | 1.90 | 1.92 | 1.98 | 4.25 | 3.8 | 3.0 | 2.80 | 2.55 | 2.30 | 2.15 | 2.00 |
| 9 | 1.90 | 1.90 | 1.95 | 2.00 | 3.22 | 3.8 | 2.95 | 2.80 | 2.55 | 2.30 | 2.15 | 2.00 |
| 10 | 1.90 | 1.92 | 1.95 | 2.00 | 2.95 | 3.8 | 2.90 | 2.80 | 2.52 | 2.25 | 2.15 | 2.00 |
| 11 | 1.88 | 1.92 | 1.95 | 2.00 | 2.80 | 3.7 | 2.90 | 2.80 | 2.52 | 2.25 | 2.12 | 2.00 |
| 12 | 1.85 | 1.90 | 1.95 | 2.00 | 2.70 | 3.6 | 2.90 | 2.80 | 2.52 | 2.22 | 2.12 | 1.95 |
| 13 | 1.85 | 1.90 | 1.95 | 2.00 | 2.65 | 3.5 | 2.90 | 2.80 | 2.52 | 2.22 | 2.10 | 1.95 |
| 14 | 1.85 | 1.90 | 1.95 | 2.10 | 2.60 | 3.5 | 2.90 | 2.72 | 2.50 | 2.20 | 2.10 | 1.95 |
| 15 | 1.82 | 1.88 | 1.95 | 3.2 | 2.60 | 3.45 | 2.90 | 2.72 | 2.50 | 2.20 | 2.10 | 1.95 |
| 16 | 1.82 | 1.88 | 1.95 | 3.75 | 2.55 | 3.4 | 2.90 | 2.70 | 2.50 | 2.20 | 2.10 | 1.95 |
| 17 | 1.82 | 1.88 | 1.98 | 3.30 | 2.50 | 3.4 | 3.0 | 2.68 | 2.50 | 2.20 | 2.10 | 1.90 |
| 18 | 1.82 | 1.88 | 1.98 | 2.80 | 2.50 | 3.4 | 3.0 | 2.65 | 2.50 | 2.20 | 2.10 | 1.90 |
| 19 | 1.82 | 1.88 | 1.98 | 2.60 | 2.50 | 3.4 | 3.0 | 2.65 | 2.50 | 2.20 | 2.10 | 1.90 |
| 20 | 1.85 | 1.88 | 1.98 | 2.50 | 2.50 | 3.4 | 3.0 | 2.65 | 2.50 | 2.20 | 2.10 | 1.90 |
| 21 | 1.85 | 1.88 | 1.98 | 2.45 | 2.50 | 3.4 | 3.0 | 2.65 | 2.50 | 2.20 | 2.05 | 1.90 |
| 22 | 1.85 | 1.90 | 1.98 | 2.45 | 2.50 | 3.35 | 3.0 | 2.62 | 2.48 | 2.20 | 2.05 | 1.90 |
| 23 | 1.88 | 1.90 | 1.98 | 2.40 | 2.65 | 3.35 | 3.0 | 2.62 | 2.45 | 2.20 | 2.05 | 1.90 |
| 24 | 1.88 | 1.90 | 1.98 | 2.40 | 7.4 | 3.35 | 2.90 | 2.60 | 2.45 | 2.20 | 2.05 | 1.90 |
| 25 | 1.88 | 1.90 | 1.98 | 2.40 | 7.0 | 3.35 | 2.90 | 2.60 | 2.42 | 2.20 | 2.05 | 1.90 |
| 26 | 1.90 | 1.90 | 1.98 | 2.35 | 6.0 | 3.3 | 2.90 | 2.60 | 2.42 | 2.20 | 2.00 | 1.90 |
| 27 | 1.90 | 1.90 | 1.98 | 2.35 | 5.2 | 3.25 | 2.85 | 2.60 | 2.42 | 2.20 | 2.00 | 1.90 |
| 28 | 1.88 | 1.90 | 1.98 | 2.30 | 4.65 | 3.25 | 2.85 | 2.60 | 2.42 | 2.20 | 2.00 | 1.90 |
| 29 | 1.88 | 1.90 | 1.98 | 2.30 | ..... | 3.2 | 2.82 | 2.60 | 2.40 | 2.20 | 1.95 | 1.90 |
| 30 | 1.88 | 1.90 | 1.98 | 2.30 | ..... | 3.2 | 2.82 | 2.60 | 2.40 | 2.20 | 2.00 | 1.90 |
| 31 | 1.88 | ..... | 1.98 | 2.25 | ..... | 3.2 | ..... | 2.58 | ..... | 2.20 | 2.00 | ..... |

NOTE.—Maximum recorded gage height Feb. 24, 7.9 feet at 5 p. m.

*Daily discharge, in second-feet, of Ventura River near Nordhoff, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.5 | 4.5 | 4.5 | 5.5 | 12 | 170 | 39 | 20 | 12 | 8.0 | 5.5 | 3.5 |
| 2 | 3.5 | 4.5 | 5 | 5.5 | 12 | 155 | 33 | 20 | 12 | 7.5 | 5.5 | 3.5 |
| 3 | 4.5 | 4.5 | 5 | 5.5 | 12 | 128 | 28 | 20 | 11 | 7.5 | 5.5 | 3.5 |
| 4 | 4.5 | 4.5 | 5 | 5.5 | 12 | 109 | 28 | 20 | 11 | 7 | 5.5 | 3.5 |
| 5 | 4.5 | 4.5 | 5 | 5.5 | 12 | 98 | 28 | 20 | 11 | 7 | 5.5 | 3.5 |
| 6 | 4.5 | 4.5 | 5 | 5.5 | 12 | 93 | 28 | 20 | 11 | 6.5 | 5.5 | 3.5 |
| 7 | 4.5 | 4.5 | 5 | 5.5 | 26 | 93 | 28 | 19 | 11 | 6.5 | 5.5 | 3.5 |
| 8 | 4.5 | 4.5 | 5 | 5.5 | 168 | 88 | 28 | 19 | 11 | 6.5 | 5 | 3.5 |
| 9 | 4.5 | 4.5 | 5 | 6 | 57 | 88 | 26 | 19 | 11 | 6.5 | 5 | 3.5 |
| 10 | 4.5 | 5 | 5 | 6 | 40 | 88 | 23 | 19 | 10 | 6 | 5 | 3.5 |
| 11 | 4.5 | 5 | 5 | 6 | 32 | 79 | 23 | 19 | 10 | 6 | 4.5 | 3.5 |
| 12 | 4 | 4.5 | 5 | 6 | 28 | 70 | 23 | 19 | 10 | 5.5 | 4.5 | 3 |
| 13 | 4 | 4.5 | 5 | 6 | 26 | 62 | 23 | 19 | 10 | 5.5 | 4.5 | 3 |
| 14 | 4 | 4.5 | 5 | 8 | 24 | 62 | 23 | 16 | 10 | 5.5 | 4.5 | 3 |
| 15 | 3.5 | 4.5 | 5 | 56 | 24 | 58 | 23 | 16 | 10 | 5.5 | 4.5 | 3 |
| 16 | 3.5 | 4.5 | 5 | 106 | 22 | 54 | 23 | 16 | 10 | 5.5 | 4.5 | 3 |
| 17 | 3.5 | 4.5 | 5.5 | 63 | 20 | 54 | 28 | 15 | 10 | 5.5 | 4.5 | 2.5 |
| 18 | 3.5 | 4.5 | 5.5 | 32 | 20 | 54 | 28 | 14 | 10 | 5.5 | 4.5 | 2.5 |
| 19 | 3.5 | 4.5 | 5.5 | 24 | 20 | 54 | 28 | 14 | 10 | 5.5 | 4.5 | 2.5 |
| 20 | 4 | 4.5 | 5.5 | 20 | 20 | 54 | 28 | 14 | 10 | 5.5 | 4.5 | 2.5 |
| 21 | 4 | 4.5 | 5.5 | 18 | 20 | 54 | 28 | 14 | 10 | 5.5 | 4 | 2.5 |
| 22 | 4 | 4.5 | 5.5 | 18 | 20 | 50 | 28 | 13 | 10 | 5.5 | 4 | 2.5 |
| 23 | 4.5 | 4.5 | 5.5 | 16 | 26 | 50 | 28 | 13 | 9 | 5.5 | 4 | 2.5 |
| 24 | 4.5 | 4.5 | 5.5 | 16 | 764 | 50 | 23 | 12 | 9 | 5.5 | 4 | 2.5 |
| 25 | 4.5 | 4.5 | 5.5 | 16 | 664 | 50 | 23 | 12 | 8.5 | 5.5 | 4 | 2.5 |
| 26 | 4.5 | 4.5 | 5.5 | 15 | 452 | 46 | 23 | 12 | 8.5 | 5.5 | 3.5 | 2.5 |
| 27 | 4.5 | 4.5 | 5.5 | 15 | 296 | 42 | 21 | 12 | 8.5 | 5.5 | 3.5 | 2.5 |
| 28 | 4.5 | 4.5 | 5.5 | 14 | 201 | 42 | 21 | 12 | 8.5 | 5.5 | 3.5 | 2.5 |
| 29 | 4.5 | 4.5 | 5.5 | 14 | ..... | 39 | 20 | 12 | 8 | 5.5 | 3 | 2.5 |
| 30 | 4.5 | 4.5 | 5.5 | 14 | ..... | 39 | 20 | 12 | 8 | 5.5 | 3.5 | 2.5 |
| 31 | 4.5 | ..... | 5.5 | 12 | ..... | 39 | ..... | 12 | ..... | 5.5 | 3.5 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1, 1912, to Feb. 24, 1913, fairly well defined below 200 second-feet (same as used for June 1 to Sept. 30, 1912, extended into high water); Feb. 25 to Sept. 30, 1913, well defined below 300 second-feet.

*Monthly discharge of Ventura River near Nordhoff, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 4.5 | 3.5 | 4.18 | 257 | C. |
| November | 5 | 4.5 | 4.53 | 270 | C. |
| December | 4.5 | 5.5 | 5.23 | 322 | C. |
| January | 106 | 5.5 | 17.8 | 1,090 | B. |
| February | 764 | 12 | 109 | 6,050 | C. |
| March | 170 | 39 | 71.4 | 4,390 | A. |
| April | 39 | 20 | 25.8 | 1,540 | A. |
| May | 20 | 12 | 15.9 | 978 | A. |
| June | 12 | 8 | 10.0 | 595 | B. |
| July | 8 | 5.5 | 5.97 | 367 | B. |
| August | 5.5 | 3 | 4.48 | 275 | C. |
| September | 3.5 | 2.5 | 2.95 | 176 | C. |
| The year | 764 | 2.5 | 22.5 | 16,300 | |

## VENTURA RIVER NEAR VENTURA, CAL.

LOCATION.—At highway bridge in Foster Memorial Park, near southeast corner of Santa Ana grant, below Ventura Water Co.'s diversion dam, one-fourth mile below mouth of Coyote Creek, and about 5 miles north of Ventura and mouth of river.

RECORDS AVAILABLE.—September 4, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Standard chain gage fastened to downstream side of bridge; length of chain 28.14 feet.

CHANNEL.—Gravel and bowlders; shifts during high water.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

DIVERSIONS.—Diversion for irrigation from main river and tributaries above the station. Pipe line for irrigation and municipal water supply in the vicinity of Ventura heads just above the dam.

ACCURACY.—Rating curve is well defined except for high stages. Results are good for medium and low stages.

*Discharge measurements of Ventura River near Ventura, Cal., during the year ending Sept. 30, 1913.*

[Made by F. C. Ebert.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 8 | 1.35 | 3.2 | Feb. 28 | 2.84 | 308 | May 22 | 1.73 | 14 |
| Dec. 2 | 1.37 | 3.4 | Mar. 7 | 2.23 | 106 | June 25 | 1.63 | 9.3 |
| Jan. 30 | 1.52 | 9.0 | Apr. 29 | 1.74 | 19 | Aug. 14 | 1.52 | 7.5 |

*Daily gage height, in feet, of Ventura River near Ventura, Cal., for the year ending Sept. 30, 1913.*

[J. B. Train, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.4 | ..... | 1.3 | 1.5 | 2.6 | 1.9 | 1.75 | 1.65 | 1.6 | 1.6 | 1.45 |
| 2 | ..... | 1.4 | 1.4 | 1.3 | 1.5 | 2.5 | 1.9 | 1.75 | 1.65 | 1.6 | 1.6 | 1.45 |
| 3 | ..... | 1.4 | 1.4 | 1.3 | 1.5 | 2.4 | 1.9 | 1.75 | 1.65 | 1.6 | 1.5 | 1.45 |
| 4 | ..... | 1.4 | 1.4 | ..... | 1.5 | 2.3 | 1.9 | 1.75 | 1.65 | 1.6 | 1.5 | 1.4 |
| 5 | ..... | 1.4 | 1.4 | 1.3 | 1.5 | 2.3 | 1.9 | 1.75 | 1.65 | 1.6 | 1.5 | 1.4 |
| 6 | ..... | 1.4 | 1.4 | 1.32 | 1.5 | 2.25 | 1.9 | 1.78 | 1.65 | 1.6 | 1.5 | 1.4 |
| 7 | ..... | 1.4 | 1.4 | 1.35 | 1.7 | 2.25 | 1.9 | 1.78 | 1.65 | 1.6 | 1.52 | 1.4 |
| 8 | 1.35 | 1.4 | 1.4 | 1.35 | 3.7 | 2.2 | 1.9 | 1.78 | 1.65 | 1.6 | 1.52 | 1.4 |
| 9 | 1.35 | 1.4 | 1.4 | 1.35 | ..... | 2.2 | 1.9 | 1.8 | 1.65 | 1.6 | 1.52 | 1.42 |
| 10 | 1.35 | 1.4 | 1.4 | 1.35 | 2.15 | 2.2 | 1.85 | 1.8 | 1.65 | 1.6 | 1.55 | 1.42 |
| 11 | 1.35 | 1.4 | 1.4 | 1.35 | 2.05 | 2.15 | 1.85 | 1.8 | 1.65 | 1.6 | ..... | 1.42 |
| 12 | 1.35 | 1.4 | 1.33 | 1.35 | 1.9 | 2.12 | 1.85 | 1.8 | 1.65 | 1.6 | ..... | 1.45 |
| 13 | 1.35 | 1.4 | 1.35 | 1.35 | 1.9 | 2.1 | 1.85 | 1.8 | 1.65 | 1.6 | ..... | 1.45 |
| 14 | 1.35 | 1.4 | 1.35 | 1.4 | 1.85 | 2.1 | 1.85 | 1.8 | 1.65 | 1.6 | 1.52 | 1.48 |
| 15 | 1.35 | 1.4 | 1.35 | 2.7 | 1.8 | 2.1 | 1.85 | 1.8 | 1.65 | 1.6 | ..... | 1.48 |
| 16 | 1.35 | 1.4 | 1.35 | 2.4 | 1.8 | 2.05 | 1.85 | 1.78 | 1.65 | 1.6 | ..... | 1.4 |
| 17 | 1.35 | 1.4 | 1.35 | 2.35 | 1.8 | 2.05 | 1.85 | 1.78 | 1.65 | 1.6 | ..... | 1.4 |
| 18 | 1.35 | 1.4 | 1.35 | 2.1 | 1.75 | 2.1 | 1.85 | 1.75 | 1.65 | 1.6 | ..... | 1.4 |
| 19 | 1.35 | 1.4 | 1.35 | 1.9 | 1.75 | 2.1 | 1.85 | 1.75 | 1.65 | 1.6 | ..... | 1.4 |
| 20 | 1.35 | 1.4 | 1.35 | 1.8 | 1.75 | 2.05 | 1.85 | 1.75 | 1.65 | 1.6 | ..... | 1.42 |
| 21 | 1.35 | 1.4 | 1.35 | 1.78 | 1.75 | 2.05 | 1.85 | 1.75 | 1.65 | 1.6 | 1.45 | 1.42 |
| 22 | 1.35 | 1.4 | 1.35 | 1.75 | 1.75 | 2.0 | 1.85 | 1.72 | 1.65 | 1.6 | 1.45 | 1.42 |
| 23 | 1.35 | 1.4 | 1.35 | 1.7 | 1.8 | 2.0 | 1.8 | 1.7 | 1.65 | 1.6 | 1.45 | 1.42 |
| 24 | 1.35 | 1.4 | 1.35 | 1.7 | 8.0 | 2.0 | 1.8 | 1.7 | 1.7 | 1.6 | 1.45 | 1.42 |
| 25 | 1.35 | 1.4 | 1.35 | 1.6 | 6.0 | 2.0 | 1.8 | 1.7 | 1.7 | 1.6 | 1.45 | 1.42 |
| 26 | 1.35 | 1.6 | 1.35 | 1.6 | 3.6 | 2.0 | 1.78 | 1.7 | 1.7 | 1.6 | 1.45 | 1.45 |
| 27 | 1.35 | 1.4 | 1.35 | 1.6 | 3.3 | 2.0 | 1.78 | 1.7 | 1.7 | 1.6 | 1.45 | 1.45 |
| 28 | 1.35 | 1.4 | 1.35 | 1.6 | 2.0 | 2.0 | 1.78 | 1.65 | 1.7 | 1.6 | 1.45 | 1.45 |
| 29 | 1.35 | 1.4 | 1.35 | 1.6 | ..... | 1.95 | 1.75 | 1.65 | 1.6 | 1.6 | 1.45 | 1.45 |
| 30 | 1.35 | 1.4 | 1.3 | 1.55 | ..... | 1.95 | 1.75 | 1.65 | 1.6 | 1.6 | 1.45 | 1.4 |
| 31 | 1.38 | ..... | 1.3 | 1.5 | ..... | 1.9 | ..... | 1.65 | ..... | 1.6 | 1.45 | ..... |

NOTE.—Gage height Feb. 24 determined from graph; maximum observed reading 9 feet at 11 a. m. Observer reported that more water was turned into pipe line above dam Dec. 12, 30, 1912, Jan. 25, Apr. 10 and Sept. 16, 1913, and that irrigating was being done above the station May 28, Aug. 3, and Sept. 30.

*Daily discharge, in second-feet, of Ventura River near Ventura, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 5 | 5 | 2 | 8 | 220 | 37 | 21 | 10 | 12 | 12 | 6 |
| 2 | 4 | 5 | 5 | 2 | 8 | 186 | 37 | 21 | 10 | 12 | 12 | 6 |
| 3 | 4 | 5 | 5 | 2 | 8 | 154 | 37 | 21 | 10 | 12 | 8 | 6 |
| 4 | 4 | 5 | 5 | 2 | 8 | 125 | 37 | 21 | 10 | 12 | 8 | 5 |
| 5 | 4 | 5 | 5 | 2 | 8 | 125 | 37 | 21 | 10 | 12 | 8 | 5 |
| 6 | 4 | 5 | 5 | 3 | 8 | 111 | 37 | 22 | 10 | 12 | 8 | 5 |
| 7 | 4 | 5 | 5 | 4 | 18 | 111 | 37 | 22 | 10 | 12 | 9 | 5 |
| 8 | 4 | 5 | 5 | 4 | 535 | 97 | 37 | 22 | 10 | 12 | 9 | 5 |
| 9 | 4 | 5 | 5 | 4 | 300 | 97 | 37 | 24 | 10 | 12 | 9 | 6 |
| 10 | 4 | 5 | 5 | 4 | 62 | 97 | 31 | 24 | 10 | 12 | 10 | 6 |
| 11 | 4 | 5 | 5 | 4 | 49 | 84 | 31 | 23 | 10 | 12 | 10 | 6 |
| 12 | 4 | 5 | 3 | 4 | 33 | 77 | 31 | 23 | 10 | 12 | 9 | 6 |
| 13 | 4 | 5 | 4 | 4 | 33 | 72 | 31 | 22 | 10 | 12 | 9 | 6 |
| 14 | 4 | 5 | 4 | 5 | 29 | 72 | 31 | 21 | 10 | 12 | 9 | 7 |
| 15 | 4 | 5 | 4 | 175 | 25 | 72 | 31 | 21 | 10 | 12 | 9 | 7 |
| 16 | 4 | 5 | 4 | 105 | 25 | 62 | 31 | 19 | 10 | 12 | 8 | 5 |
| 17 | 4 | 5 | 4 | 96 | 25 | 62 | 31 | 19 | 10 | 12 | 8 | 5 |
| 18 | 4 | 5 | 4 | 55 | 22 | 72 | 31 | 17 | 10 | 12 | 7 | 5 |
| 19 | 4 | 5 | 4 | 33 | 22 | 72 | 31 | 17 | 10 | 12 | 7 | 5 |
| 20 | 4 | 5 | 4 | 25 | 22 | 62 | 31 | 16 | 10 | 12 | 6 | 6 |
| 21 | 4 | 5 | 4 | 24 | 22 | 62 | 31 | 16 | 10 | 12 | 6 | 6 |
| 22 | 4 | 5 | 4 | 22 | 22 | 52 | 31 | 13 | 10 | 12 | 6 | 6 |
| 23 | 4 | 5 | 4 | 18 | 25 | 52 | 25 | 12 | 10 | 12 | 6 | 6 |
| 24 | 4 | 5 | 4 | 18 | 3,200 | 52 | 25 | 12 | 12 | 12 | 6 | 6 |
| 25 | 4 | 5 | 4 | 13 | 1,950 | 52 | 25 | 12 | 12 | 12 | 6 | 6 |
| 26 | 4 | 5 | 4 | 13 | 615 | 52 | 23 | 12 | 12 | 12 | 6 | 6 |
| 27 | 4 | 5 | 4 | 13 | 485 | 52 | 23 | 12 | 12 | 12 | 6 | 6 |
| 28 | 4 | 5 | 4 | 13 | 290 | 52 | 23 | 10 | 12 | 12 | 6 | 6 |
| 29 | 4 | 5 | 4 | 13 | ..... | 44 | 21 | 10 | 12 | 12 | 6 | 6 |
| 30 | 4 | 5 | 2 | 10 | ..... | 44 | 21 | 10 | 12 | 12 | 6 | 5 |
| 31 | 4 | ..... | 2 | 8 | ..... | 37 | ..... | 10 | ..... | 12 | 6 | ..... |

NOTE.—Daily discharge determined as follows:
Oct. 1, 1912 to Feb. 24, 1913, from fairly well defined rating curves (same as used for Jan. 1 to Sept. 30, 1912); Feb. 25 to May 5, 1913, and June 29 to Sept. 30, 1913, from curves fairly well defined below 400 second-feet; May 22 to June 28, 1913, from fairly well defined curves, May 6 to 21, 1913, by indirect method for shifting channels; Oct. 1 to 7, 1912, estimated; Feb. 24 and 25 estimated by extension of rating curves; results are only approximate. Discharge interpolated for other days for which record is not given.

*Monthly discharge of Ventura River near Ventura, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 4 | 4 | 4.0 | 246 | C. |
| November | 5 | 5 | 5.0 | 298 | C. |
| December | 5 | 2 | 4.2 | 258 | C. |
| January | 175 | 2 | 22.6 | 1,390 | B. |
| February | 3,200 | 8 | 281 | 15,600 | C. |
| March | 220 | 37 | 83.3 | 5,120 | A. |
| April | 37 | 21 | 30.7 | 1,830 | A. |
| May | 24 | 10 | 17.6 | 1,080 | B. |
| June | 12 | 10 | 10.5 | 625 | B. |
| July | 12 | 12 | 12.0 | 738 | C. |
| August | 12 | 6 | 7.8 | 480 | C. |
| September | 7 | 5 | 5.7 | 339 | C. |
| The year | 3,200 | 2 | 38.7 | 28,000 | |

## SANTA YNEZ RIVER BASIN.

### SANTA YNEZ RIVER NEAR SANTA BARBARA, CAL.

LOCATION.—In sec. 10, T. 5 N., R. 27 W., one-fourth mile below Gibraltar dam site, about 7 miles north of Santa Barbara. Mono Creek enters 3½ miles above the station.

RECORDS AVAILABLE.—November 1, 1903, to April 30, 1907; October 1, 1907, to January 31, 1908; and February 6, 1910, to September 30, 1913. A station was maintained about 5 miles above the present site from November 21, 1902, to June 20, 1903.

DRAINAGE AREA.—218 square miles. (Revised measurement from topographic maps.)

GAGE.—Staff in three sections about 900 feet below north portal of the Santa Barbara water-supply tunnel. On April 13, 1911, gage datum was lowered 5.00 feet.

CHANNEL.—Sand and gravel; shifts greatly at extreme high stages; relatively permanent at low water.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet below gage or by wading.

ACCURACY.—Discharge computed from rating curves, covering short periods, and by indirect method for shifting channels. Frequent measurements are made and results are good.

COOPERATION.—Station maintained in cooperation with Santa Barbara Water Commission.

*Discharge measurements of Santa Ynez River near Santa Barbara, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Oct. 2 | C. M. Watts | 4.62 | 0.2 |
| 11 | do | 4.64 | .3 |
| 21 | do | 4.63 | .3 |
| 31 | do | 4.64 | .3 |
| Nov. 10 | do | 4.66 | .6 |
| 17 | do | 4.66 | .8 |
| Dec. 29 | B. H. Hodgson, jr | 4.70 | .9 |
| Jan. 10 | do | 4.70 | 2.3 |
| 17 | do | 5.30 | 61 |
| 31 | do | 4.74 | 1.8 |
| Feb. 10 | do | 4.99 | 39 |
| 20 | do | 4.81 | 14 |
| 24 | do | 9.40 | 2,000 |
| 24 | do | 9.10 | 1,600 |
| 26 | do | 6.52 | 480 |
| 27 | do | 5.99 | 254 |
| 28 | do | 5.78 | 159 |
| Mar. 12 | do | 5.23 | 70 |
| 19 | do | 5.20 | 50 |
| 26 | C. M. Watts | 5.02 | 41 |
| Apr. 1 | F. C. Ebert | 4.89 | 30 |
| 2 | C. M. Watts | 4.89 | 32 |
| 7 | do | 4.85 | 27 |
| 10 | do | 4.82 | 28 |
| 14 | do | 4.81 | 26 |
| 21 | do | 4.82 | 28 |
| Apr. 26 | C. M. Watts | 4.77 | 20 |
| May 1 | do | 4.75 | 18 |
| 7 | do | 4.71 | 16 |
| 15 | do | 4.70 | 14 |
| 19 | do | 4.67 | 10 |
| 25 | do | 4.65 | 8.3 |
| 31 | do | 4.64 | 7.8 |
| June 5 | do | 5.10 | 44 |
| 10 | do | 4.67 | 9.7 |
| 16 | do | 4.63 | 5.4 |
| 27 | do | 4.60 | 4.4 |
| July 2 | do | 4.53 | 2.2 |
| 9 | do | 4.45 | 1.3 |
| 14 | do | 4.41 | 1.1 |
| 19 | do | 4.40 | .7 |
| 24 | do | 4.41 | .8 |
| 29 | do | 4.42 | 1.0 |
| Aug. 4 | do | 4.36 | .5 |
| 11 | do | 4.35 | .3 |
| 16 | F. C. Ebert | 4.30 | .4 |
| 17 | C. M. Watts | 4.28 | .4 |
| 25 | do | 4.23 | .2 |
| 28 | do | 4.80 | 21 |
| Sept. 6 | do | 4.31 | .3 |
| 14 | do | 4.25 | .1 |
| 24 | do | 4.25 | .07 |

*Daily gage height, in feet, of Santa Ynez River near Santa Barbara, Cal., for the year ending Sept. 30, 1913.*

[B. H. Hodgson, jr., and C. M. Watts, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.62 | 4.64 | ..... | 4.70 | 4.72 | 5.6 | 4.89 | 4.75 | 4.63 | 4.55 | 4.40 | 4.40 |
| 2 | 4.62 | 4.64 | ..... | 4.70 | 4.72 | 5.5 | 4.89 | 4.75 | 4.62 | 4.53 | 4.38 | 4.37 |
| 3 | 4.62 | 4.64 | ..... | 4.69 | 4.72 | 5.4 | 4.88 | 4.75 | 4.62 | 4.52 | 4.38 | 4.37 |
| 4 | 4.62 | ..... | ..... | 4.69 | 4.72 | 5.4 | 4.87 | 4.74 | 4.62 | ..... | 4.36 | 4.35 |
| 5 | 4.63 | ..... | ..... | 4.70 | 4.72 | 5.45 | 4.85 | 4.73 | 5.1 | ..... | 4.36 | 4.32 |
| 6 | 4.63 | 4.65 | ..... | 4.69 | 4.72 | 5.45 | 4.85 | 4.73 | 4.80 | ..... | 4.36 | 4.31 |
| 7 | ..... | 4.65 | ..... | 4.67 | 4.90 | 5.43 | 4.85 | 4.71 | 4.70 | 4.47 | 4.35 | 4.31 |
| 8 | ..... | 4.65 | ..... | 4.65 | 6.1 | 5.4 | 4.84 | 4.71 | 4.67 | 4.45 | 4.35 | 4.30 |
| 9 | 4.63 | 4.65 | ..... | 4.70 | 5.3 | 5.3 | 4.84 | 4.71 | 4.67 | 4.45 | 4.35 | 4.30 |
| 10 | 4.64 | 4.66 | ..... | 4.70 | 5.1 | ..... | 4.82 | 4.71 | 4.67 | 4.42 | ..... | ..... |
| 11 | 4.64 | 4.66 | ..... | 4.70 | 5.0 | ..... | 4.81 | 4.71 | 4.67 | 4.41 | 4.35 | 4.30 |
| 12 | 4.64 | ..... | ..... | 4.70 | 4.90 | 5.26 | 4.81 | 4.70 | 4.66 | 4.41 | 4.35 | 4.30 |
| 13 | ..... | 4.66 | ..... | 4.70 | 4.90 | 5.1 | 4.81 | 4.70 | 4.65 | 4.40 | 4.35 | 4.30 |
| 14 | 4.64 | 4.66 | ..... | ..... | 4.88 | 5.1 | 4.81 | 4.70 | 4.64 | 4.41 | 4.35 | 4.25 |
| 15 | 4.64 | 4.66 | ..... | ..... | 4.88 | 5.8 | 4.81 | 4.69 | ..... | 4.42 | 4.32 | 4.25 |
| 16 | 4.64 | 4.66 | ..... | ..... | 4.87 | 5.4 | 4.81 | 4.68 | 4.63 | 4.42 | 4.30 | 4.24 |
| 17 | 4.63 | 4.66 | ..... | 5.30 | 4.86 | 5.2 | 4.81 | 4.68 | 4.63 | 4.41 | 4.28 | 4.24 |
| 18 | 4.63 | 4.66 | ..... | ..... | 4.84 | 5.4 | 4.87 | ..... | 4.63 | 4.40 | 4.27 | 4.24 |
| 19 | 4.63 | 4.66 | ..... | ..... | 4.82 | 5.2 | 4.87 | 4.67 | 4.62 | 4.40 | 4.27 | 4.24 |
| 20 | 4.63 | 4.66 | ..... | ..... | 4.82 | 5.2 | ..... | 4.67 | 4.60 | 4.40 | 4.27 | 4.24 |
| 21 | 4.63 | 4.66 | ..... | 4.80 | 4.83 | 5.0 | 4.82 | 4.67 | 4.60 | 4.43 | 4.27 | ..... |
| 22 | 4.63 | ..... | ..... | 4.80 | 4.90 | 5.0 | 4.82 | 4.66 | 4.60 | 4.41 | 4.26 | 4.24 |
| 23 | 4.63 | ..... | ..... | 4.80 | 4.90 | 5.0 | 4.80 | 4.66 | 4.58 | 4.41 | 4.26 | 4.24 |
| 24 | 4.63 | 4.66 | ..... | 4.80 | 9.2 | 5.0 | 4.78 | 4.66 | 4.57 | 4.41 | ..... | 4.25 |
| 25 | 4.63 | 4.66 | ..... | 4.79 | 7.6 | ..... | 4.77 | 4.65 | 4.55 | 4.41 | 4.23 | 4.26 |
| 26 | 4.63 | ..... | ..... | 4.78 | 6.5 | 5.02 | 4.77 | 4.65 | 4.55 | 4.41 | 4.23 | 4.26 |
| 27 | 4.64 | ..... | ..... | 4.76 | 6.1 | 5.01 | 4.77 | 4.65 | 4.60 | ..... | 4.23 | 4.26 |
| 28 | 4.64 | ..... | ..... | 4.76 | 5.8 | 5.0 | 4.76 | 4.65 | 4.60 | 4.41 | 4.80 | 4.26 |
| 29 | 4.64 | ..... | 4.70 | 4.74 | ..... | 5.0 | 4.76 | 4.65 | 4.58 | 4.42 | 4.50 | 4.26 |
| 30 | 4.64 | ..... | 4.70 | 4.74 | ..... | 4.90 | 4.76 | 4.65 | 4.57 | 4.42 | 4.48 | 4.26 |
| 31 | 4.64 | ..... | 4.70 | 4.74 | ..... | 4.88 | ..... | 4.64 | ..... | 4.42 | 4.45 | ..... |

*Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0.4 | 0.6 | 1.0 | 1.4 | 152 | 31 | 18 | 7.5 | 3.0 | 0.8 | 1.0 |
| 2 | .2 | .4 | .6 | 1.0 | 1.4 | 126 | 31 | 18 | 7.0 | 2.6 | .6 | .7 |
| 3 | .2 | .4 | .6 | .9 | 1.4 | 102 | 30 | 18 | 7.0 | 2.4 | .6 | .7 |
| 4 | .2 | .4 | .7 | .9 | 1.4 | 102 | 29 | 18 | 7.0 | 2.2 | .5 | .6 |
| 5 | .3 | .4 | .7 | 1.0 | 1.4 | 114 | 28 | 17 | 44 | 2.0 | .5 | .4 |
| 6 | .3 | .5 | .7 | .9 | 1.4 | 114 | 28 | 17 | 17 | 1.8 | .5 | .4 |
| 7 | .3 | .5 | .7 | .7 | 11 | 109 | 28 | 15 | 10 | 1.6 | .4 | .4 |
| 8 | .3 | .5 | .7 | .5 | 290 | 102 | 28 | 15 | 8.2 | 1.3 | .4 | .3 |
| 9 | .3 | .5 | .7 | 1.0 | 82 | 82 | 28 | 15 | 8.2 | 1.3 | .4 | .3 |
| 10 | .4 | .6 | .7 | 1.0 | 50 | 80 | 28 | 15 | 8.2 | 1.0 | .4 | .3 |
| 11 | .4 | .6 | .7 | 1.0 | 36 | 78 | 27 | 15 | 8.2 | .9 | .4 | .3 |
| 12 | .4 | .6 | .8 | 1.0 | 24 | 76 | 27 | 14 | 7.6 | .9 | .4 | .3 |
| 13 | .4 | .6 | .8 | 1.0 | 24 | 53 | 26 | 14 | 7.0 | .8 | .4 | .3 |
| 14 | .4 | .6 | .8 | 1.0 | 22 | 53 | 26 | 14 | 6.5 | .9 | .4 | .1 |
| 15 | .4 | .6 | .8 | 30 | 22 | 210 | 26 | 14 | 6.2 | 1.0 | .3 | .1 |
| 16 | .4 | .6 | .8 | 80 | 21 | 102 | 26 | 13 | 6.0 | 1.0 | .3 | .1 |
| 17 | .3 | .6 | .8 | 62 | 20 | 66 | 26 | 12 | 6.0 | .9 | .3 | .1 |
| 18 | .3 | .6 | .8 | 20 | 17 | 102 | 32 | 11 | 6.0 | .8 | .3 | .1 |
| 19 | .3 | .6 | .8 | 10 | 15 | 66 | 32 | 10 | 5.5 | .8 | .3 | .1 |
| 20 | .3 | .6 | .8 | 6 | 15 | 66 | 30 | 10 | 4.5 | .8 | .3 | .1 |
| 21 | .3 | .6 | .8 | 4 | 16 | 42 | 28 | 10 | 4.5 | 1.1 | .3 | .1 |
| 22 | .3 | .6 | .9 | 4 | 24 | 42 | 27 | 9.5 | 4.5 | .9 | .3 | .1 |
| 23 | .3 | .6 | .9 | 4 | 24 | 42 | 23 | 9.0 | 3.9 | .9 | .3 | .1 |
| 24 | .3 | .6 | .9 | 4 | 1,780 | 42 | 22 | 8.5 | 3.6 | .9 | .2 | .1 |
| 25 | .3 | .6 | .9 | 3.5 | 930 | 43 | 20 | 8.3 | 3.0 | .9 | .2 | .1 |
| 26 | .3 | .6 | .9 | 3.1 | 455 | 44 | 20 | 8.3 | 3.0 | .9 | .2 | .1 |
| 27 | .4 | .6 | .9 | 2.4 | 310 | 43 | 20 | 8.3 | 4.5 | .9 | .2 | .1 |
| 28 | .4 | .6 | .9 | 2.4 | 210 | 42 | 19 | 8.3 | 4.5 | .9 | 23 | .1 |
| 29 | .4 | .6 | 1.0 | 1.8 | ..... | 42 | 19 | 8.0 | 3.9 | 1.0 | 4.0 | .1 |
| 30 | .4 | .6 | 1.0 | 1.8 | ..... | 32 | 19 | 8.0 | 3.6 | 1.0 | 3.4 | .1 |
| 31 | .4 | ..... | 1.0 | 1.8 | ..... | 30 | ..... | 7.8 | ..... | 1.0 | 2.5 | ..... |

NOTE.—Daily discharge determined as follows: Oct. 1, 1912, to Feb. 8, Feb. 9 to 24, Feb. 25 to Apr. 7, Apr. 27 to May 15, June 5 to Aug. 27, and Aug. 28 to Sept. 13, from fairly well defined rating curves. Apr. 8 to 26 and May 16 to June 4, by indirect method for shifting channels; Jan. 14 to 16 and 18 to 20, during which intervals a rise occurred, by comparison with records of Ventura River near Nordhoff. Discharge interpolated for other days for which record is not given.

*Monthly discharge of Santa Ynez River near Santa Barbara, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 207 square miles.]

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0.4 | 0.2 | 0.33 | 20 | |
| November | .6 | .4 | .55 | 33 | |
| December | 1.0 | .6 | .80 | 49 | |
| January | 80 | .5 | 8.18 | 503 | D. |
| February | 1,780 | 1.4 | 157 | 8,720 | C. |
| March | 210 | 30 | 77.4 | 4,760 | B. |
| April | 32 | 19 | 26.1 | 1,550 | A. |
| May | 18 | 7.8 | 12.5 | 769 | B. |
| June | 44 | 3.0 | 7.55 | 449 | B. |
| July | 3.0 | .8 | 1.24 | 76 | C. |
| August | 23 | .2 | 1.39 | 85 | D. |
| September | 1.0 | .1 | .26 | 15 | |
| The year | 1,780 | .1 | 23.6 | 17,000 | |

## SANTA YNEZ RIVER NEAR LOMPOC, CAL.

LOCATION.—At the highway bridge near east boundary of La Mision Vieja de la Purisima grant, about 1½ miles east of Lompoc.

RECORDS AVAILABLE.—November 10, 1906, to January 9, 1907, and September 25, 1907, to September 30, 1913.

DRAINAGE AREA.—725 square miles.

GAGE.—Vertical staff fastened to pier of bridge.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

DIVERSIONS.—Water is not diverted above the station, but water for irrigation is pumped from wells along the banks of the river.

ACCURACY.—Discharge computed from rating tables, covering short periods and by indirect method for shifting channels. Results fair.

COOPERATION.—Gage-height record furnished by Santa Barbara Water Commission.

*Discharge measurements of Santa Ynez River near Lompoc, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 7 | Donald McDonald | 2.80 | 21 | Apr. 11 | Donald McDonald | 2.67 | 63 |
| Nov. 11 | do | 2.83 | 24 | May 10 | do | 2.58 | 40 |
| Dec. 6 | do | 2.80 | 25 | June 5 | R. C. Rice | 2.60 | [b] 24 |
| Jan. 8 | do | 2.82 | 34 | 5 | Donald McDonald | 2.60 | [b] 25 |
| Feb. 13 | do | 3.00 | 80 | July 14 | do | 2.51 | 17 |
| 25 | do | 4.60 | [a] 4,470 | Aug. 11 | do | 2.50 | 11 |
| Mar. 13 | do | 2.98 | 147 | Sept. 8 | do | 2.49 | 10 |

[a] Measurement not reliable owing to poor measuring conditions.
[b] Includes three-fourths second-foot estimated flow in secondary channels.

*Daily gage height, in feet, of Santa Ynez River near Lompoc Cal., for the year ending Sept. 30, 1913.*

[Donald McDonald, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.2 | 2.8 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 2 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.2 | 2.8 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 3 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.2 | 2.8 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 4 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 5 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 6 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 9 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 10 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 11 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 12 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 13 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 14 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.55 | 2.5 | 2.5 |
| 15 | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 16 | 2.8 | 2.8 | 2.8 | 2.9 | 3.0 | 3.0 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 17 | 2.8 | 2.8 | 2.8 | 2.9 | 3.0 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 18 | 2.8 | 2.8 | 2.8 | 2.9 | 3.0 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 19 | 2.8 | 2.8 | 2.8 | 2.9 | 3.0 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 20 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 21 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 22 | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 23 | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.7 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 |
| 24 | 2.8 | 2.8 | 2.8 | 2.8 | 3.0 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 25 | 2.8 | 2.8 | 2.8 | 2.8 | 4.65 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 26 | 2.8 | 2.8 | 2.8 | 2.8 | 4.0 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 27 | 2.8 | 2.8 | 2.8 | 2.8 | 3.3 | 2.9 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 28 | 2.8 | 2.8 | 2.8 | 2.8 | 3.2 | 2.8 | 2.7 | 2.6 | 2.55 | 2.5 | 2.6 | 2.5 |
| 29 | 2.8 | 2.8 | 2.8 | 2.8 | ..... | 2.8 | 2.6 | 2.6 | 2.55 | 2.5 | 2.6 | 2.5 |
| 30 | 2.8 | 2.8 | 2.8 | 2.8 | ..... | 2.8 | 2.6 | 2.6 | 2.55 | 2.5 | 2.6 | 2.5 |
| 31 | 2.8 | ..... | 2.8 | 2.8 | ..... | 2.8 | ..... | 2.6 | ..... | 2.5 | 2.5 | ..... |

NOTE.—Other gage readings Feb. 25 were 4.4 feet at 7.50 a. m. and 4.9 feet at 3 p. m.

*Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 23 | 25 | 32 | 37 | 350 | 93 | 47 | 26 | 17 | 11 | 11 |
| 2 | 21 | 23 | 25 | 33 | 35 | 350 | 90 | 46 | 25 | 17 | 11 | 11 |
| 3 | 21 | 23 | 25 | 33 | 33 | 350 | 87 | 45 | 25 | 17 | 11 | 11 |
| 4 | 21 | 24 | 25 | 33 | 31 | 240 | 84 | 44 | 24 | 17 | 11 | 11 |
| 5 | 21 | 24 | 25 | 33 | 29 | 240 | 81 | 44 | 24 | 17 | 11 | 11 |
| 6 | 21 | 24 | 25 | 34 | 27 | 240 | 78 | 43 | 24 | 17 | 11 | 11 |
| 7 | 21 | 24 | 25 | 34 | 25 | 240 | 75 | 42 | 24 | 17 | 11 | 11 |
| 8 | 21 | 24 | 25 | 34 | 70 | 150 | 72 | 41 | 24 | 17 | 11 | 11 |
| 9 | 21 | 24 | 25 | 34 | 125 | 150 | 69 | 40 | 24 | 17 | 11 | 11 |
| 10 | 21 | 24 | 26 | 34 | 185 | 150 | 66 | 40 | 24 | 17 | 11 | 11 |
| 11 | 21 | 24 | 26 | 34 | 100 | 150 | 63 | 40 | 24 | 17 | 11 | 11 |
| 12 | 21 | 24 | 26 | 34 | 90 | 150 | 62 | 39 | 24 | 17 | 11 | 11 |
| 13 | 21 | 24 | 27 | 34 | 80 | 150 | 61 | 38 | 24 | 17 | 11 | 11 |
| 14 | 21 | 24 | 27 | 34 | 80 | 147 | 60 | 38 | 24 | 17 | 11 | 11 |
| 15 | 21 | 24 | 27 | 125 | 80 | 144 | 60 | 37 | 24 | 11 | 11 | 11 |
| 16 | 21 | 24 | 28 | 70 | 80 | 141 | 59 | 36 | 24 | 11 | 11 | 11 |
| 17 | 22 | 24 | 28 | 68 | 75 | 138 | 58 | 36 | 24 | 11 | 11 | 11 |
| 18 | 22 | 24 | 28 | 66 | 75 | 135 | 57 | 35 | 24 | 11 | 11 | 11 |
| 19 | 22 | 24 | 28 | 64 | 75 | 132 | 56 | 34 | 24 | 11 | 11 | 11 |
| 20 | 22 | 24 | 29 | 62 | 75 | 129 | 56 | 34 | 24 | 11 | 11 | 11 |
| 21 | 22 | 24 | 29 | 60 | 70 | 126 | 55 | 33 | 24 | 11 | 11 | 11 |
| 22 | 22 | 24 | 29 | 58 | 70 | 123 | 54 | 32 | 24 | 11 | 11 | 11 |
| 23 | 22 | 24 | 30 | 56 | 70 | 120 | 53 | 32 | 24 | 11 | 11 | 11 |
| 24 | 22 | 25 | 30 | 54 | 125 | 117 | 52 | 31 | 24 | 11 | 11 | 11 |
| 25 | 22 | 25 | 30 | 52 | 4,470 | 114 | 52 | 30 | 24 | 11 | 11 | 11 |
| 26 | 23 | 25 | 31 | 50 | 2,600 | 111 | 51 | 30 | 24 | 11 | 11 | 11 |
| 27 | 23 | 25 | 31 | 48 | 900 | 108 | 50 | 29 | 24 | 11 | 11 | 11 |
| 28 | 23 | 25 | 31 | 46 | 500 | 105 | 49 | 28 | 17 | 11 | 24 | 11 |
| 29 | 23 | 25 | 32 | 44 | ..... | 102 | 48 | 28 | 17 | 11 | 24 | 11 |
| 30 | 23 | 25 | 32 | 42 | ..... | 99 | 48 | 27 | 17 | 11 | 24 | 11 |
| 31 | 23 | ..... | 32 | 40 | ..... | 96 | ..... | 26 | ..... | 11 | 11 | ..... |

NOTE.—Daily discharge determined by indirect method for shifting channels, interpolation between measurements, and rating curves covering short periods. Observer's measurement Feb. 25 taken as mean discharge for day.

*Monthly discharge of Santa Ynez River near Lompoc, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 23 | 21 | 21.7 | 1,330 | C. |
| November | 25 | 23 | 24.1 | 1,430 | C. |
| December | 32 | 25 | 27.8 | 1,710 | C. |
| January | 125 | 32 | 47.6 | 2,930 | C. |
| February | 4,470 | 25 | 365 | 20,300 | D. |
| March | 350 | 96 | 164 | 10,100 | C. |
| April | 93 | 48 | 63.3 | 3,770 | C. |
| May | 47 | 26 | 36.3 | 2,230 | C. |
| June | 26 | 17 | 23.4 | 1,390 | B. |
| July | 17 | 11 | 13.7 | 842 | B. |
| August | 24 | 11 | 12.3 | 756 | B. |
| September | 11 | 11 | 11.0 | 655 | B. |
| The year | 4,470 | 11 | 65.5 | 47,400 | |

## SALINAS RIVER BASIN.

### ARROYO SECO NEAR SOLEDAD, CAL.

LOCATION.—In sec. 21, T. 19 S., R. 6 E., at Pettitt's ranch, about 15 miles south of Soledad.

RECORDS AVAILABLE.—January 1, 1901, to September 30, 1913.

DRAINAGE AREA.—215 square miles.

GAGE.—Staff in two sections on right bank.

CHANNEL.—Gravel and fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 400 feet below gage or by wading.

ACCURACY.—Frequent discharge measurements are made. Rating curve fairly well defined; results good.

*Discharge measurements of Arroyo Seco near Soledad, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 15 | Charles Pettitt | 3.75 | 12 | May 4 | Charles Pettitt | 3.85 | 17 |
| Jan. 17 | do | 5.24 | 258 | June 1 | do | 3.68 | 8.1 |
| Mar. 10 | do | 3.93 | 23 | 7 | R. C. Rice | 3.58 | 4.0 |
| Apr. 6 | do | 4.05 | 35 | 19 | Charles Pettitt | 3.45 | 1.9 |

*Daily gage height, in feet, of Arroyo Seco near Soledad, Cal., for the year ending Sept. 30, 1913.*

[Mrs. Charles Pettitt, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.40 | 3.60 | 3.70 | 3.80 | 4.02 | ..... | 4.10 | 3.89 | 3.68 | 3.43 | 3.10 | 2.55 |
| 2 | 3.40 | 3.60 | 3.70 | 3.80 | 4.01 | 3.98 | 4.10 | 3.88 | 3.68 | 3.41 | 3.10 | 2.52 |
| 3 | 3.40 | 3.60 | 3.70 | 3.80 | 4.00 | 3.98 | 4.09 | 3.85 | 3.66 | 3.40 | 3.08 | 2.51 |
| 4 | 3.40 | 3.61 | 3.70 | 3.80 | 4.00 | 3.95 | 4.09 | 3.85 | 3.64 | 3.40 | 3.06 | 2.51 |
| 5 | 3.40 | 3.61 | 3.70 | 3.80 | 4.00 | 3.95 | 4.09 | 3.83 | 3.62 | 3.39 | 3.05 | 2.50 |
| 6 | 3.41 | 3.62 | 3.71 | 3.80 | 4.00 | 3.95 | 4.05 | 3.82 | 3.59 | 3.39 | 3.05 | 2.50 |
| 7 | 3.42 | 3.63 | 3.71 | 3.80 | 4.00 | 3.93 | 4.05 | 3.80 | 3.58 | 3.36 | 3.04 | 2.50 |
| 8 | 3.42 | 3.64 | 3.71 | 3.85 | 4.10 | 3.93 | 4.03 | 3.80 | 3.55 | 3.34 | 3.04 | 2.50 |
| 9 | 3.44 | 3.65 | 3.71 | 3.85 | 4.20 | 3.93 | 4.00 | 3.81 | 3.53 | 3.32 | 3.02 | ..... |
| 10 | 3.45 | 3.65 | 3.71 | 3.85 | 4.10 | 3.93 | 4.00 | 3.80 | 3.53 | 3.30 | 3.02 | ..... |
| 11 | 3.45 | 3.68 | 3.71 | 3.85 | 4.08 | 3.93 | 4.00 | 3.80 | 3.52 | 3.30 | 3.02 | ..... |
| 12 | 3.45 | 3.70 | 3.72 | 3.85 | 4.05 | 3.95 | 3.98 | 3.80 | 3.51 | 3.30 | 3.01 | ..... |
| 13 | 3.45 | 3.70 | 3.72 | 3.85 | 4.02 | 3.93 | 3.98 | 3.80 | 3.51 | 3.30 | 3.00 | ..... |
| 14 | 3.44 | 3.69 | 3.72 | 3.90 | 4.00 | 3.93 | 3.98 | 3.78 | 3.50 | 3.29 | 3.00 | ..... |
| 15 | 3.44 | 3.68 | 3.75 | 6.9 | 4.00 | 3.93 | 3.98 | 3.76 | 3.50 | 3.29 | 2.89 | ..... |
| 16 | 3.43 | 3.68 | 3.91 | 5.3 | 4.00 | 3.92 | 3.98 | 3.75 | 3.50 | 3.29 | 2.85 | ..... |
| 17 | 3.43 | 3.68 | 3.85 | 5.6 | 4.00 | 3.92 | 3.98 | 3.75 | 3.48 | 3.28 | 2.75 | ..... |
| 18 | 3.43 | 3.66 | 3.82 | 5.0 | 4.00 | 4.09 | 3.98 | 3.75 | 3.46 | 3.28 | 2.70 | ..... |
| 19 | 3.43 | 3.65 | 3.81 | 4.80 | 3.98 | 4.30 | 3.98 | 3.73 | 3.45 | 3.26 | 2.65 | ..... |
| 20 | 3.43 | 3.71 | 3.80 | 4.60 | 3.98 | 4.11 | 3.95 | 3.73 | 3.44 | 3.26 | 2.62 | ..... |
| 21 | 3.44 | 3.69 | 3.80 | 4.50 | 3.95 | 4.08 | 3.95 | 3.72 | 3.42 | 3.25 | 2.60 | ..... |
| 22 | 3.45 | 3.69 | 3.80 | 4.50 | 3.95 | 4.15 | 3.93 | 3.72 | 3.42 | 3.22 | 2.58 | ..... |
| 23 | 3.48 | 3.69 | 3.80 | 4.50 | 3.95 | 4.40 | 3.91 | 3.71 | 3.41 | 3.18 | 2.58 | ..... |
| 24 | 3.50 | 3.69 | 3.80 | 4.40 | 4.00 | 4.45 | 3.90 | 3.70 | 3.40 | 3.15 | 2.56 | ..... |
| 25 | 3.51 | 3.68 | 3.80 | 4.40 | 4.08 | 4.35 | 3.89 | 3.70 | 3.40 | 3.12 | 2.56 | ..... |
| 26 | 3.52 | 3.68 | 3.80 | 4.35 | 4.01 | 4.29 | 3.88 | 3.70 | 3.44 | 3.10 | 2.54 | ..... |
| 27 | 3.55 | 3.69 | 3.80 | 4.30 | 4.00 | 4.20 | 3.88 | 3.70 | 3.49 | 3.10 | 2.53 | ..... |
| 28 | 3.58 | 3.69 | 3.80 | 4.25 | 4.00 | 4.20 | 3.88 | 3.70 | 3.48 | 3.10 | 2.52 | ..... |
| 29 | 3.58 | 3.70 | 3.80 | 4.20 | ..... | 4.18 | 3.85 | 3.70 | 3.46 | 3.10 | 2.72 | ..... |
| 30 | 3.61 | 3.70 | 3.80 | 4.10 | ..... | 4.15 | 3.85 | 3.73 | 3.45 | 3.10 | 2.61 | ..... |
| 31 | 3.61 | ..... | 3.80 | 4.05 | ..... | 4.15 | ..... | 3.70 | ..... | 3.10 | 2.60 | ..... |

NOTE.—Gage height Jan. 15 is mean of three observations during day; maximum observed stage, 8.4 feet at 11 a. m. Gage heights from about July 13 to Sept. 8 represent level of pool at gage; practically no flow; Sept. 9 to 30 creek practically dry.

*Daily discharge, in second-feet, of Arroyo Seco near Soledad, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 5 | 9 | 13 | 32 | 29 | 40 | 20 | 8 | 1.5 |
| 3 | 1 | 5 | 9 | 13 | 31 | 28 | 40 | 19 | 8 | 1 |
| 3 | 1 | 5 | 9 | 13 | 30 | 28 | 39 | 17 | 7.5 | 1 |
| 4 | 1 | 5.5 | 9 | 13 | 30 | 26 | 39 | 17 | 6.5 | 1 |
| 5 | 1 | 5.5 | 9 | 13 | 30 | 26 | 39 | 15 | 6 | .9 |
| 6 | 1 | 6 | 9.5 | 13 | 30 | 26 | 35 | 15 | 5 | .9 |
| 7 | 1.5 | 6 | 9.5 | 13 | 30 | 24 | 35 | 13 | 4.5 | .6 |
| 8 | 1.5 | 6.5 | 9.5 | 17 | 40 | 24 | 33 | 13 | 4 | .4 |
| 9 | 1.5 | 7 | 9.5 | 17 | 52 | 24 | 30 | 14 | 3 | .2 |
| 10 | 2 | 7 | 9.5 | 17 | 40 | 24 | 30 | 13 | 3 | ..... |
| 11 | 2 | 8 | 9.5 | 17 | 38 | 24 | 30 | 13 | 3 | ..... |
| 12 | 2 | 9 | 10 | 17 | 35 | 26 | 28 | 13 | 3 | ..... |
| 13 | 2 | 9 | 10 | 17 | 32 | 24 | 28 | 13 | 3 | ..... |
| 13 | 1.5 | 8.5 | 10 | 21 | 30 | 24 | 28 | 12 | 2.5 | ..... |
| 15 | 1.5 | 8 | 11 | 925 | 30 | 24 | 28 | 11 | 2.5 | ..... |
| 16 | 1.5 | 8 | 22 | 280 | 30 | 23 | 28 | 11 | 2.5 | ..... |
| 17 | 1.5 | 8 | 17 | 370 | 30 | 23 | 28 | 11 | 2. | ..... |
| 18 | 1.5 | 7.5 | 15 | 207 | 30 | 39 | 28 | 11 | 2 | ..... |
| 19 | 1.5 | 7 | 14 | 163 | 28 | 68 | 28 | 10 | 2 | ..... |
| 20 | 1.5 | 9.5 | 13 | 122 | 28 | 41 | 26 | 10 | 1.5 | ..... |
| 21 | 1.5 | 8.5 | 13 | 102 | 26 | 38 | 26 | 10 | 1.5 | ..... |
| 22 | 2 | 8.5 | 13 | 102 | 26 | 46 | 24 | 10 | 1.5 | ..... |
| 23 | 2 | 8.5 | 13 | 102 | 26 | 84 | 22 | 9.5 | 1 | ..... |
| 24 | 2.5 | 8.5 | 13 | 84 | 30 | 93 | 21 | 9 | 1 | ..... |
| 25 | 3 | 8 | 13 | 84 | 38 | 76 | 20 | 9 | 1 | ..... |
| 26 | 3 | 8 | 13 | 76 | 31 | 66 | 19 | 9 | 1.5 | ..... |
| 27 | 4 | 8.5 | 13 | 68 | 30 | 52 | 19 | 9 | 2.5 | ..... |
| 28 | 4.5 | 8.5 | 13 | 60 | 30 | 52 | 19 | 9 | 2 | ..... |
| 29 | 4.5 | 9 | 13 | 52 | ..... | 50 | 17 | 9 | 2 | ..... |
| 30 | 5.5 | 9 | 13 | 40 | ..... | 46 | 17 | 10 | 2 | ..... |
| 31 | 5.5 | ..... | 13 | 35 | ..... | 46 | ..... | 9 | ..... | ..... |

NOTE.—Daily discharge determined from a fairly well defined curve applicable Oct. 1, 1912, to July 12, 1913. Practically no flow July 13 to Sept. 30. Discharge interpolated Mar. 1.

*Monthly discharge of Arroyo Seco near Soledad, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 5.5 | 1 | 2.16 | 133 | C. |
| November | 9.5 | 5 | 7.53 | 448 | B. |
| December | 22 | 9 | 11.8 | 726 | B. |
| January | 925 | 13 | 99.5 | 6,120 | B. |
| February | 52 | 26 | 31.9 | 1,770 | B. |
| March | 93 | 23 | 39.5 | 2,430 | B. |
| April | 40 | 17 | 28.1 | 1,670 | B. |
| May | 20 | 9 | 12.0 | 738 | B. |
| June | 8 | 1 | 3.18 | 189 | C. |
| July | 1.5 | 0 | .24 | 15 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 925 | 0 | 19.7 | 14,200 | |

## PAJARO RIVER BASIN.

### PAJARO RIVER AT WATSONVILLE, CAL.

LOCATION.—At highway bridge at Watsonville, about 10 miles below mouth of San Benito River and 5 miles above mouth.

RECORDS AVAILABLE.—September 14, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured

GAGE.—Vertical staff in two sections on first pier from right end of bridge.

CHANNEL.—Shifting sand.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Amount of diversion above station not known.

ACCURACY.—Results fair.

*Discharge measurements of Pajaro River at Watsonville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 28 | Lasley Lee | 1.98 | 21 | June 8 | R. C. Rice | 1.29 | 0.2 |
| Apr. 17 | R. C. Rice | 1.82 | 15 | | | | |

*Daily gage height, in feet, of Pajaro River at Watsonville, Cal., for the year ending Sept. 30, 1913.*

[Ulysses Meginniss, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.68 | 1.90 | 1.80 | 2.00 | 2.10 | 2.00 | 2.00 | 1.55 | 1.34 | 1.22 | 1.21 | 1.20 |
| 2 | 1.70 | 1.95 | 1.85 | 2.00 | 2.10 | 2.00 | 2.04 | 1.50 | 1.34 | 1.21 | 1.20 | ..... |
| 3 | 1.65 | 1.90 | 1.80 | 2.00 | 2.10 | 2.00 | 2.02 | 1.45 | 1.33 | 1.20 | 1.20 | ..... |
| 4 | 1.68 | 1.95 | 1.75 | 2.00 | 2.05 | 2.00 | 2.00 | 1.47 | 1.33 | 1.20 | 1.20 | 1.21 |
| 5 | 1.66 | 1.85 | 1.80 | 2.00 | 2.10 | 2.00 | 2.01 | 1.46 | 1.33 | 1.21 | 1.20 | ..... |
| 6 | 1.70 | 1.90 | 1.85 | 2.05 | 2.05 | 2.01 | 2.03 | 1.45 | 1.32 | 1.23 | 1.20 | 1.22 |
| 7 | 1.70 | 1.95 | 1.95 | 2.05 | 2.10 | 2.00 | 2.03 | 1.44 | 1.31 | 1.23 | 1.20 | ..... |
| 8 | 1.70 | 1.95 | 2.00 | 2.05 | 2.10 | 2.00 | 2.01 | 1.45 | 1.30 | 1.22 | 1.20 | ..... |
| 9 | 1.71 | 2.00 | 1.95 | 2.05 | 2.10 | 2.00 | 2.02 | 1.50 | 1.28 | 1.21 | 1.21 | 1.21 |
| 10 | 1.70 | 2.00 | 2.00 | 2.00 | 2.05 | 2.00 | 2.03 | 1.70 | 1.27 | 1.21 | 1.20 | ..... |
| 11 | 1.68 | 1.95 | 2.00 | 2.00 | 2.05 | 2.01 | 2.01 | 1.72 | 1.26 | 1.21 | 1.20 | ..... |
| 12 | 1.70 | 2.00 | 2.00 | 2.05 | 2.10 | 2.00 | 2.03 | 1.65 | 1.25 | 1.23 | 1.20 | 1.20 |
| 13 | ..... | 2.00 | 2.00 | 2.05 | 2.10 | 1.99 | 2.01 | 1.50 | 1.24 | 1.23 | 1.21 | ..... |
| 14 | 1.68 | 1.95 | 2.05 | 2.05 | 2.10 | 1.98 | 2.03 | 1.49 | 1.23 | 1.23 | 1.21 | ..... |
| 15 | 1.70 | 2.05 | 2.10 | 2.80 | 2.10 | 1.97 | 2.00 | 1.50 | 1.23 | 1.24 | 1.21 | ..... |
| 16 | 1.70 | 2.00 | 2.10 | 2.90 | 2.05 | 1.60 | 2.00 | 1.53 | 1.22 | 1.23 | 1.21 | ..... |
| 17 | 1.70 | 1.95 | 1.95 | 4.0 | 2.10 | 1.60 | 1.70 | 1.50 | 1.22 | 1.23 | 1.21 | ..... |
| 18 | 1.68 | 1.90 | 1.90 | 3.5 | 2.05 | 1.61 | 1.80 | 1.48 | 1.22 | 1.24 | ..... | ..... |
| 19 | 1.70 | 1.85 | 2.00 | 2.00 | 2.05 | 1.63 | 1.80 | 1.42 | 1.22 | 1.23 | 1.20 | ..... |
| 20 | ..... | 1.90 | 2.05 | 2.00 | 2.10 | 1.68 | 1.80 | 1.38 | 1.22 | 1.22 | ..... | ..... |
| 21 | 1.70 | 1.95 | 2.10 | 2.05 | 2.10 | 2.00 | 1.79 | 1.35 | 1.21 | 1.22 | 1.20 | ..... |
| 22 | 1.80 | 1.95 | 2.05 | 2.05 | 2.05 | 2.05 | 1.80 | 1.31 | 1.21 | 1.22 | ..... | ..... |
| 23 | 1.80 | 1.90 | 2.10 | 2.05 | 2.05 | 2.15 | 1.75 | 1.30 | 1.20 | 1.21 | 1.20 | ..... |
| 24 | 1.80 | 1.95 | 2.05 | 2.00 | 2.05 | 2.45 | 1.75 | 1.27 | 1.20 | 1.21 | 1.19 | ..... |
| 25 | 1.90 | 1.85 | 2.00 | 2.25 | 2.05 | 2.35 | 1.70 | 1.26 | 1.21 | 1.22 | ..... | ..... |
| 26 | 1.90 | 1.90 | 2.00 | 2.05 | 2.00 | 2.30 | 1.60 | 1.25 | 1.21 | 1.22 | ..... | ..... |
| 27 | 1.85 | 1.85 | 2.00 | 2.05 | 2.00 | 2.27 | 1.60 | 1.37 | 1.21 | 1.22 | 1.18 | ..... |
| 28 | 1.90 | 1.80 | 1.95 | 2.10 | 1.99 | 2.25 | 1.57 | 1.35 | 1.21 | 1.21 | ..... | ..... |
| 29 | 1.95 | 1.95 | 2.00 | 2.05 | ..... | 2.20 | 1.55 | 1.27 | 1.20 | 1.21 | ..... | ..... |
| 30 | 1.95 | 1.95 | 2.00 | 2.05 | ..... | 2.10 | 1.53 | 1.35 | 1.23 | 1.21 | 1.20 | ..... |
| 31 | 1.90 | ..... | 2.00 | 2.10 | ..... | 2.00 | ..... | 1.35 | ..... | 1.21 | 1.20 | ..... |

NOTE.—Water standing in pool at gage beginning about Aug. 12. A little water flows occasionally during the night from irrigation dams above the station.

*Daily discharge, in second-feet, of Pajaro River at Watsonville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 10 | 6 | 15 | 30 | 23 | 23 | 5 | 0.5 | 0.1 | 0.05 |
| 2 | 2 | 12 | 8 | 15 | 30 | 23 | 26 | 4 | .5 | .05 | .05 |
| 3 | 2 | 10 | 6 | 15 | 20 | 23 | 24 | 2 | .4 | .05 | .05 |
| 4 | 2 | 12 | 4 | 15 | 26 | 23 | 23 | 3 | .4 | .05 | .05 |
| 5 | 2 | 8 | 6 | 15 | 30 | 23 | 24 | 3 | .4 | .05 | .05 |
| 6 | 2 | 10 | 8 | 18 | 26 | 24 | 25 | 2 | .4 | .1 | .05 |
| 7 | 2 | 12 | 12 | 18 | 30 | 23 | 25 | 2 | .3 | .1 | .05 |
| 8 | 2 | 12 | 15 | 18 | 30 | 23 | 24 | 2 | .2 | .1 | .05 |
| 9 | 2 | 15 | 12 | 18 | 30 | 23 | 24 | 4 | .2 | .05 | .05 |
| 10 | 2 | 15 | 15 | 15 | 26 | 23 | 25 | 10 | .2 | .05 | .05 |
| 11 | 2 | 12 | 15 | 15 | 26 | 24 | 24 | 11 | .1 | .05 | .05 |
| 12 | 2 | 15 | 15 | 18 | 30 | 23 | 25 | 8 | .1 | .1 | ..... |
| 13 | 2 | 15 | 15 | 18 | 30 | 22 | 24 | 4 | .1 | .1 | ..... |
| 14 | 2 | 12 | 18 | 18 | 30 | 22 | 25 | 4 | .1 | .1 | ..... |
| 15 | 2 | 18 | 22 | 140 | 30 | 22 | 23 | 4 | .1 | .1 | ..... |
| 16 | 2 | 15 | 22 | 170 | 26 | 7 | 23 | 5 | .1 | .1 | ..... |
| 17 | 2 | 12 | 12 | 560 | 30 | 7 | 10 | 4 | .1 | .1 | ..... |
| 18 | 2 | 10 | 10 | 370 | 26 | 7 | 13 | 3 | .1 | .1 | ..... |
| 19 | 2 | 8 | 15 | 23 | 26 | 8 | 13 | 2 | .1 | .1 | ..... |
| 20 | 2 | 10 | 18 | 23 | 30 | 9 | 13 | .8 | .1 | .1 | ..... |
| 21 | 2 | 12 | 22 | 26 | 30 | 23 | 13 | .6 | .05 | .1 | ..... |
| 22 | 6 | 12 | 18 | 26 | 26 | 26 | 13 | .3 | .05 | .1 | ..... |
| 23 | 6 | 10 | 22 | 26 | 26 | 34 | 12 | .2 | .05 | .05 | ..... |
| 24 | 6 | 12 | 18 | 23 | 26 | 70 | 12 | .2 | .05 | .05 | ..... |
| 25 | 10 | 8 | 15 | 42 | 26 | 55 | 10 | .1 | .05 | .1 | ..... |
| 26 | 10 | 10 | 15 | 26 | 23 | 48 | 7 | .1 | .05 | .1 | ..... |
| 27 | 8 | 8 | 15 | 26 | 23 | 45 | 7 | .8 | .05 | .1 | ..... |
| 28 | 10 | 6 | 12 | 30 | 22 | 42 | 6 | .6 | .05 | .05 | ..... |
| 29 | 12 | 12 | 15 | 26 | ..... | 37 | 6 | .2 | .05 | .05 | ..... |
| 30 | 12 | 12 | 15 | 26 | ..... | 30 | 5 | .6 | .1 | .05 | ..... |
| 31 | 10 | ..... | 15 | 30 | ..... | 23 | ..... | .6 | ..... | .05 | ..... |

NOTE.—Daily discharge determined from two poorly defined rating curves applicable Mar. 13, 1912, to Jan. 17, 1913, and Jan. 18 to Sept. 30, 1913. Water standing in pool at gage from about Aug. 12 to Sept. 30.

*Monthly discharge of Pajaro River at Watsonville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 12 | 2 | 4.3 | 264 | D |
| November | 18 | 6 | 11.5 | 684 | D |
| December | 22 | 4 | 14.1 | 867 | D |
| January | 560 | 15 | 58.8 | 3,620 | C |
| February | 30 | 22 | 27.6 | 1,530 | C |
| March | 70 | 7 | 26.3 | 1,620 | C |
| April | 26 | 5 | 17.6 | 1,050 | C |
| May | 11 | .1 | 2.81 | 173 | D |
| June | .5 | .05 | .168 | 10 | D |
| July | .1 | .05 | .079 | 5 | D |
| August | .05 | .0 | .018 | 1 | D |
| September | .0 | .0 | .000 | 0 | |
| The year | 560 | .0 | 13.6 | 9,820 | |

## KERN AND TULARE LAKE BASINS.

### TULARE LAKE IF KINGS COUNTY, CAL.

Tulare Lake is about 30 miles directly south of Fresno and 40 miles northwest of Bakersfield. The lake is roughly rectangular in shape and its greatest length is from northwest to southeast. In November, 1907, when its margin was carefully determined, the lake had an area of about 274 square miles, a maximum depth of 12.4 feet, an average length of 20 miles, and a width of 13.5 miles; the water's edge was 3 miles from the town of Corcoran, and the water surface about 12 feet below. The lake surface reached its greatest height in the summer of 1907, when it had a maximum depth of nearly 14 feet. Since July, 1907, it has been gradually subsiding.

The lake bed resembles a flat saucer. The flat, level area in the bottom has an elevation of approximately 180 feet above mean sea level and covers about 55 square miles. The lowest point on the crest of the delta ridge to the north is about 27 feet higher than the bottom of the lake. Natural overflow will not occur, therefore, until the lake has a maximum depth of nearly 30 feet and an area of nearly 1,000 square miles.

During 1906 and a part of 1907 a record of the stage of the lake was obtained near the entrance of Kings River near Lemoore, Cal., at the middle of sec. 4, T. 21 S., R. 20 E. The zero of the gage was at an elevation of 175.1 feet above mean sea level, or 4 feet below the bottom of the lake (elevation 179.1 feet). May 11, 1907, a staff gage was set near Corcoran, Cal., referred to the same datum and used until July 30, 1909.

July 28, 1910, a vertical staff gage in two sections was installed on the section line just south of the corner to secs. 27, 28, 33, and 34, T. 20 S., R. 20 E., about 10 miles south of Lemoore near Stratford post office. The datum of this gage is 171 feet above sea level. August 20, 1913, a vertical staff in four sections was installed at same datum, in main north and south waterway 4 to 6 miles southeast of Stratford. Sections No. 1 and No. 2 are 1 mile south of 1910 gage, in sec. 3, T. 21 S., R. 20 E. No. 3 is in sec. 10 and No. 4 is in sec. 15, 1 and 2 miles, respectively, south of sections No. 1 and No. 2.

The following summary[1] gives a brief history of the fluctuations of the lake surface since 1853:

1853. High.

1853–1861. Subsidence; elevation of surface in 1861, 204 feet above sea level.

1861–1863. Rapid rise to the highest known stage, 220 feet above sea level, overflowing into San Joaquin River; area about 800 square miles.

1863–1867. Decline to about 208 or 209 feet above sea level.

1867–1868. Filled again to about 220 feet above sea level.

1872–1876. Fluctuated between 211 and 217 feet above sea level.

1876–1883. Decline to 192 feet above sea level; lowest stage then known.

1883–1897. Fluctuating; generally low.

1897–1905. Decline; practically dry in 1898; dry in autumn of 1905.

1905–1907. Rise; elevation of water surface in summer of 1907, 193 feet above sea level; area of water surface, November, 1907, 274 square miles.

1907–1908. Depth gradually decreased from 14 feet in June, 1907, to 8.3 feet in December, 1908.

1909–1911. Gradual rise to depth of 13.4 feet in July, 1909; change in stage gradual to December, 1911, when depth was 10 feet.

1912–1913. Precipitation low. Depth gradually decreased to 1.5 feet in September, 1913.

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[1] Mendenhall, W. C., Dole, R. R., and Stabler, Herman, Ground water in San Joaquin Valley, California: U. S. Geol. Survey Water-Supply Paper 398, p. 281, 1916.

*Daily gage height, in feet, of Tulare Lake in Kings County, Cal., for the year ending Sept. 30, 1913.*

[Mrs. G. E. Kolbenstetter and Miss Gertrude Thomson, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 6.0 | | | | | | | | | |
| 2 | | | | | | 5.8 | | | | | | |
| 3 | | 6.1 | | | 5.8 | | | | | | | |
| 4 | | | | | | | | 4.9 | | | | |
| 5 | | | | 5.6 | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | 6.4 | | 5.9 | | | | 5.45 | | | | | 1.95 |
| 8 | | | | | | | | | 3.7 | | | |
| 9 | | | | | | 5.7 | | | | | | |
| 10 | | | | | 5.7 | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | 4.7 | | | | |
| 13 | 6.3 | 6.1 | | | | | | | | | | |
| 14 | | | | | | | 5.3 | | | | | |
| 15 | | | 5.8 | | | | | | 3.8 | | | 1.5 |
| 16 | | | | | | 5.6 | | | | | | |
| 17 | | 6.05 | | | 5.0 | | | | | | | |
| 18 | | | | | | | | | | | | |
| 19 | | | | | | | | 4.6 | | | | |
| 20 | 6.0 | | | | | | 5.25 | | | | 2.2 | |
| 21 | | | | | | | | | | | | |
| 22 | | | 5.7 | | | | | | 3.2 | | | |
| 23 | | 6.0 | | | 5.7 | 5.5 | | | | | | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | 6.1 | | | | | | 5.0 | | | | | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | | | 4.3 | | | | |
| 30 | | | 5.7 | | | 5.5 | | | | | | |
| 31 | | | | | | | | | | | | |

NOTE.—Figures show the actual depth of the water on the lowest point of the lake bed.

## KERN RIVER NEAR KERNVILLE, CAL.

LOCATION.—In sec. 14, T. 23 S., R. 32 E., at base of Fairview Mountain, in Kern National Forest, 3 miles above Salmon Creek, and about 15 miles north of Kernville.

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in three sections fastened to overhanging willow tree on left bank about 1 mile above mouth of Tobias Creek. About April 1, 1913, an auxiliary staff gage at a different datum was installed about one-fourth mile above. Friez water-stage recorder was installed September 15, 1913, 150 feet below the original gage and at the same datum.

CHANNEL.—Coarse gravel and bowlders; appears permanent.

DISCHARGE MEASUREMENTS.—Made from cable about 250 feet below gage or by wading.

ACCURACY.—Rating curve well defined; results excellent.

COOPERATION.—Maintained in cooperation with United States Forest Service and Southern California Edison Co., through H. W. Dennis, engineer.

*Discharge measurements of Kern River near Kernville, Cal., during the years 1912–1914.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| 1912. | | *Feet.* | *Sec.-ft.* | 1913. | | *Feet.* | *Sec.-ft.* |
| July 27 | J. E. Stewart | 0.18 | 347 | July 24 | H. J. Tompkins | 0.96 | 610 |
| Sept. 29 | H. J. Tompkins | −.57 | 168 | Sept. 25 | do | [b]−.30 | 218 |
| 1913. | | | | 1914. | | | |
| Mar. 25 | H. J. Tompkins | −.16 | 245 | Mar. 16 | H. J. Tompkins | 1.68 | 1,020 |
| May 29 | do | 1.72 | 1,030 | 19 | do | 2.07 | 1,210 |
| 30 | do | [a]1.78 | 1,060 | May 23 | do | 3.80 | 2,800 |
| July 23 | do | 1.33 | 788 | | | | |

[a] Upper staff gage read 1.80 feet. [b] Upper staff gage read −0.14 foot.

*Daily gage height, in feet, of Kern River near Kernville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | −0.6 | −0.5 | −0.55 | −0.6 | −0.4 | −0.35 | 0.7 | 1.0 | 1.9 | 0.6 | 0.3 | 1.7 |
| 2 | −.55 | −.5 | −.55 | −.6 | −.4 | −.3 | .8 | .9 | 1.9 | .5 | 1.1 | 1.3 |
| 3 | −.5 | −.5 | −.55 | −.6 | −.4 | −.3 | .5 | .9 | 1.9 | .9 | .9 | 1.0 |
| 4 | −.5 | −.5 | −.55 | −.55 | −.4 | −.2 | .5 | .9 | 1.7 | 1.0 | .7 | .8 |
| 5 | −.45 | −.45 | −.55 | −.45 | −.4 | −.1 | .6 | 1.0 | 1.6 | 1.0 | .5 | .5 |
| 6 | −.4 | −.45 | −.55 | −.75 | −.4 | .0 | .6 | 1.3 | 1.7 | 1.0 | .3 | .5 |
| 7 | −.4 | −.4 | −.55 | −.4 | −.4 | .0 | .5 | 1.5 | 1.8 | 1.1 | .3 | .4 |
| 8 | −.45 | −.45 | −.55 | −.35 | −.2 | .05 | .5 | 1.5 | 1.9 | 1.0 | .3 | .3 |
| 9 | −.45 | −.45 | −.55 | −.5 | −.3 | .1 | .6 | 1.6 | 1.6 | 1.0 | .3 | .25 |
| 10 | −.45 | −.4 | −.6 | −.5 | −.4 | .1 | .8 | 1.7 | 1.5 | .9 | .2 | .1 |
| 11 | −.5 | −.4 | −.6 | −.25 | −.4 | .1 | .8 | 1.7 | 1.3 | .9 | .15 | .05 |
| 12 | −.5 | −.45 | −.6 | −.4 | −.4 | .0 | .9 | 1.8 | 1.4 | .8 | .15 | .05 |
| 13 | −.5 | −.45 | −.6 | −.5 | −.4 | −.1 | .9 | 1.7 | 1.8 | .6 | −.05 | .05 |
| 14 | −.5 | −.45 | −.65 | −.45 | −.4 | −.15 | .9 | 1.6 | 1.9 | .5 | −.25 | .05 |
| 15 | −.55 | −.5 | −.65 | −.6 | −.4 | −.2 | .6 | 1.5 | 1.9 | .4 | −.25 | −.05 |
| 16 | −.55 | −.5 | −.7 | −.55 | −.3 | −.15 | .6 | 1.7 | 1.7 | .3 | −.25 | −.1 |
| 17 | −.55 | −.5 | −.6 | −.6 | −.3 | −.1 | .6 | 2.2 | 1.6 | .25 | −.3 | −.15 |
| 18 | −.55 | −.5 | −.6 | −.6 | −.2 | +.05 | .5 | 2.4 | 1.6 | .15 | −.25 | −.2 |
| 19 | −.55 | −.5 | −.6 | −.5 | −.4 | −.05 | .4 | 1.9 | 1.4 | .35 | −.3 | −.2 |
| 20 | −.55 | −.5 | −.65 | −.65 | −.5 | −.1 | .6 | 2.0 | 1.1 | .4 | −.4 | −.25 |
| 21 | −.55 | −.5 | −.7 | −.35 | −.35 | −.05 | .5 | 2.1 | 1.2 | .4 | −.4 | −.25 |
| 22 | −.55 | −.5 | −.6 | −.4 | −.4 | −.05 | .5 | 2.5 | 1.3 | .6 | −.25 | −.25 |
| 23 | −.55 | −.5 | −.4 | −.5 | −.4 | −.1 | .8 | 2.8 | 1.4 | 1.1 | +.05 | −.25 |
| 24 | −.55 | −.5 | −.45 | −.5 | −.35 | −.1 | 1.0 | 2.8 | 1.4 | 1.1 | .1 | −.3 |
| 25 | −.55 | −.5 | −.4 | −.45 | −.4 | −.2 | 1.1 | 2.7 | 1.3 | .8 | .25 | −.3 |
| 26 | −.55 | −.5 | −.5 | −.5 | −.2 | −.2 | 1.3 | 2.5 | 1.1 | .6 | .9 | −.3 |
| 27 | −.55 | −.5 | −.4 | −.45 | −.3 | −.1 | 1.3 | 2.3 | 1.1 | .5 | 1.0 | −.35 |
| 28 | −.5 | −.5 | −.3 | −.4 | −.3 | .0 | 1.3 | 2.1 | 1.0 | .7 | 2.7 | −.4 |
| 29 | −.5 | −.5 | −.3 | −.4 | ..... | .0 | 1.3 | 2.0 | .9 | .8 | 1.6 | −.4 |
| 30 | −.5 | −.5 | −.6 | −.4 | ..... | .3 | 1.2 | 1.7 | .5 | .6 | 1.5 | −.4 |
| 31 | −.5 | ..... | −.6 | −.4 | ..... | .6 | ..... | 1.7 | ..... | .35 | 1.6 | ..... |

NOTE.—Original staff gage read Jan. 1, 1912, to Mar. 31, 1913; upper staff read Apr. 1 to Sept. 14, 1913, and gage heights corrected with a relation curve to read as from original staff; water-stage recorder used Sept. 15–30, 1913.

*Daily discharge, in second-feet, of Kern River near Kernville, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | | |
| 1 | 340 | 265 | 265 | 328 | 545 | 2,700 | 585 | 315 | 200 |
| 2 | 340 | 265 | 265 | 370 | 545 | 2,800 | 545 | 315 | 190 |
| 3 | 340 | 265 | 265 | 370 | 505 | 3,000 | 545 | 290 | 190 |
| 4 | 340 | 265 | 265 | 370 | 545 | 3,000 | 470 | 290 | 200 |
| 5 | 340 | 265 | 290 | 370 | 545 | 2,600 | 470 | 265 | 200 |
| 6 | 355 | 265 | 370 | 370 | 545 | 2,700 | 470 | 265 | 200 |
| 7 | 340 | 265 | 302 | 400 | 545 | 2,700 | 545 | 265 | 190 |
| 8 | 355 | 265 | 290 | 435 | 545 | 2,310 | 545 | 265 | 190 |
| 9 | 355 | 265 | 290 | 470 | 545 | 1,860 | 545 | 265 | 190 |
| 10 | 265 | 265 | 315 | 418 | 630 | 1,680 | 545 | 265 | 190 |
| 11 | 265 | 265 | 290 | 418 | 725 | 1,680 | 545 | 252 | 180 |
| 12 | 265 | 265 | 328 | 435 | 830 | 1,680 | 545 | 252 | 180 |
| 13 | 265 | 265 | 240 | 400 | 830 | 1,440 | 545 | 240 | 172 |
| 14 | 278 | 265 | 290 | 400 | 1,010 | 1,360 | 505 | 240 | 172 |
| 15 | 278 | 265 | 315 | 435 | 1,080 | 1,360 | 470 | 240 | 180 |
| 16 | 278 | 265 | 340 | 435 | 1,210 | 1,360 | 435 | 240 | 165 |
| 17 | 265 | 265 | 315 | 435 | 1,360 | 1,360 | 470 | 240 | 165 |
| 18 | 265 | 265 | 315 | 470 | 1,520 | 1,360 | 725 | 230 | 165 |
| 19 | 265 | 265 | 315 | 435 | 1,520 | 1,360 | 675 | 220 | 165 |
| 20 | 265 | 265 | 315 | 400 | 1,360 | 1,360 | 585 | 220 | 165 |
| 21 | 265 | 265 | 315 | 400 | 1,210 | 1,210 | 505 | 220 | 165 |
| 22 | 265 | 265 | 290 | 400 | 1,010 | 950 | 470 | 210 | 165 |
| 23 | 265 | 265 | 315 | 400 | 950 | 830 | 400 | 210 | 165 |
| 24 | 265 | 240 | 315 | 470 | 1,080 | 675 | 400 | 200 | 165 |
| 25 | 265 | 240 | 315 | 470 | 1,080 | 630 | 370 | 200 | 165 |
| 26 | 265 | 240 | 328 | 470 | 1,010 | 630 | 355 | 210 | 165 |
| 27 | 265 | 265 | 340 | 435 | 1,080 | 630 | 340 | 220 | 165 |
| 28 | 265 | 265 | 340 | 470 | 1,520 | 630 | 328 | 220 | 165 |
| 29 | 265 | 265 | 355 | 470 | 2,220 | 630 | 340 | 200 | 165 |
| 30 | 278 | ..... | 340 | 505 | 2,600 | 630 | 340 | 200 | 165 |
| 31 | 265 | ..... | 315 | ..... | 2,400 | ..... | 328 | 200 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 165 | 180 | 172 | 165 | 200 | 210 | 505 | 630 | 1,140 | 470 | 370 | 1,010 |
| 2 | 172 | 180 | 172 | 165 | 200 | 220 | 545 | 585 | 1,140 | 435 | 675 | 775 |
| 3 | 180 | 180 | 172 | 165 | 200 | 220 | 435 | 585 | 1,140 | 585 | 585 | 630 |
| 4 | 180 | 180 | 172 | 172 | 200 | 240 | 435 | 585 | 1,010 | 630 | 505 | 545 |
| 5 | 190 | 190 | 172 | 190 | 200 | 265 | 470 | 630 | 950 | 630 | 435 | 435 |
| 6 | 200 | 190 | 172 | 142 | 200 | 290 | 470 | 775 | 1,010 | 630 | 370 | 435 |
| 7 | 200 | 200 | 172 | 200 | 200 | 290 | 435 | 890 | 1,080 | 675 | 370 | 400 |
| 8 | 190 | 190 | 172 | 210 | 240 | 302 | 435 | 890 | 1,140 | 630 | 370 | 370 |
| 9 | 190 | 190 | 172 | 180 | 220 | 315 | 470 | 950 | 950 | 630 | 370 | 355 |
| 10 | 190 | 200 | 165 | 180 | 200 | 315 | 545 | 1,010 | 890 | 585 | 340 | 315 |
| 11 | 180 | 200 | 165 | 230 | 200 | 315 | 545 | 1,010 | 775 | 585 | 328 | 302 |
| 12 | 180 | 190 | 165 | 200 | 200 | 290 | 585 | 1,080 | 830 | 545 | 328 | 302 |
| 13 | 180 | 190 | 165 | 180 | 200 | 265 | 585 | 1,010 | 1,080 | 470 | 278 | 302 |
| 14 | 180 | 190 | 158 | 190 | 200 | 252 | 585 | 950 | 1,140 | 435 | 230 | 302 |
| 15 | 172 | 180 | 158 | 165 | 200 | 240 | 470 | 890 | 1,140 | 400 | 230 | 278 |
| 16 | 172 | 180 | 150 | 172 | 220 | 252 | 470 | 1,010 | 1,010 | 370 | 230 | 265 |
| 17 | 172 | 180 | 165 | 165 | 220 | 265 | 470 | 1,360 | 950 | 355 | 220 | 252 |
| 18 | 172 | 180 | 165 | 165 | 240 | 302 | 435 | 1,520 | 950 | 328 | 230 | 240 |
| 19 | 172 | 180 | 165 | 180 | 200 | 278 | 400 | 1,140 | 830 | 385 | 220 | 240 |
| 20 | 172 | 180 | 158 | 158 | 180 | 265 | 470 | 1,210 | 675 | 400 | 200 | 230 |
| 21 | 172 | 180 | 150 | 210 | 210 | 278 | 435 | 1,280 | 725 | 400 | 200 | 230 |
| 22 | 172 | 180 | 165 | 200 | 200 | 278 | 435 | 1,600 | 775 | 470 | 230 | 230 |
| 23 | 172 | 180 | 200 | 180 | 200 | 265 | 545 | 1,860 | 830 | 675 | 302 | 230 |
| 24 | 172 | 180 | 190 | 180 | 210 | 265 | 630 | 1,860 | 830 | 675 | 315 | 220 |
| 25 | 172 | 180 | 200 | 190 | 200 | 240 | 675 | 1,770 | 775 | 545 | 355 | 220 |
| 26 | 172 | 180 | 180 | 180 | 240 | 240 | 775 | 1,600 | 675 | 470 | 585 | 220 |
| 27 | 172 | 180 | 200 | 190 | 220 | 265 | 775 | 1,440 | 675 | 435 | 630 | 210 |
| 28 | 180 | 180 | 220 | 200 | 220 | 290 | 775 | 1,280 | 630 | 505 | 1,770 | 200 |
| 29 | 180 | 180 | 220 | 200 | ..... | 290 | 775 | 1,210 | 585 | 545 | 950 | 200 |
| 30 | 180 | 180 | 165 | 200 | ..... | 370 | 725 | 1,010 | 435 | 470 | 890 | 200 |
| 31 | 180 | ..... | 165 | 200 | ..... | 470 | ..... | 1,010 | ..... | 385 | 950 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Kern River near Kernville, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| January | 355 | 265 | 290 | 17,800 | A. |
| February | 265 | 240 | 262 | 15,100 | A. |
| March | 370 | 240 | 308 | 18,900 | A. |
| April | 505 | 328 | 422 | 25,100 | A. |
| May | 2,600 | 505 | 1,070 | 65,800 | A. |
| June | 3,000 | 630 | 1,570 | 93,400 | A. |
| July | 725 | 328 | 482 | 29,600 | A. |
| August | 315 | 200 | 241 | 14,800 | A. |
| September | 200 | 165 | 177 | 10,500 | A. |
| The period | | | | 291,000 | |
| 1912–13. | | | | | |
| October | 200 | 165 | 178 | 10,900 | A. |
| November | 200 | 180 | 184 | 10,900 | A. |
| December | 220 | 150 | 174 | 10,700 | A. |
| January | 230 | 142 | 184 | 11,300 | A. |
| February | 240 | 180 | 208 | 11,600 | A. |
| March | 470 | 210 | 279 | 17,200 | A. |
| April | 775 | 400 | 544 | 32,400 | A. |
| May | 1,860 | 585 | 1,120 | 68,900 | A. |
| June | 1,140 | 435 | 892 | 53,100 | A. |
| July | 675 | 328 | 508 | 31,200 | A. |
| August | 1,770 | 200 | 454 | 27,900 | A. |
| September | 1,010 | 200 | 338 | 20,100 | A. |
| The year | 1,860 | 142 | 423 | 306,000 | |

## KERN RIVER NEARB BAKERSFIELD, CAL.[1]

LOCATION.—In sec. 2, T. 29 S., R. 28 E., at mouth of lower canyon, 5 miles northeast of Bakersfield.

RECORDS AVAILABLE.—January 1, 1894, to June 30, 1907, and March 1, 1908, to September 30, 1913.

DRAINAGE AREA.—2,340 square miles.

GAGE.—Water-stage recorder at footbridge.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage.

DIVERSIONS.—Several small diversions on main river and South Fork for irrigation. Water diverted at and below Kernville for power development is returned to the river above the station.

ACCURACY.—Results considered good.

COOPERATION.—Daily discharge record furnished by Kern County Land Co., through A. K. Warren, engineer.

[1] Station also known as at "first point of measurement."

*Daily discharge, in second-feet, of Kern River near Bakersfield, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 177 | 204 | 194 | 197 | 235 | 392 | 548 | 893 | 1,101 | 567 | 510 | 1,079 |
| 2 | 175 | 202 | 203 | 196 | 233 | 366 | 630 | 851 | 1,200 | 560 | 469 | 1,158 |
| 3 | 181 | 185 | 189 | 187 | 226 | 366 | 678 | 744 | 1,244 | 621 | 530 | 956 |
| 4 | 186 | 203 | 192 | 190 | 229 | 357 | 599 | 721 | 1,383 | 664 | 671 | 806 |
| 5 | 187 | 219 | 196 | 188 | 235 | 380 | 573 | 766 | 1,271 | 669 | 595 | 684 |
| 6 | 189 | 210 | 201 | 185 | 239 | 423 | 603 | 766 | 1,210 | 692 | 525 | 611 |
| 7 | 183 | 209 | 194 | 172 | 244 | 492 | 709 | 896 | 1,264 | 698 | 474 | 549 |
| 8 | 206 | 211 | 189 | 136 | 250 | 487 | 651 | 959 | 1,218 | 740 | 431 | 487 |
| 9 | 204 | 204 | 199 | 136 | 271 | 462 | 632 | 1,013 | 1,221 | 729 | 413 | 457 |
| 10 | 202 | 195 | 191 | 187 | 281 | 502 | 655 | 1,042 | 1,151 | 708 | 384 | 423 |
| 11 | 204 | 180 | 194 | 193 | 274 | 501 | 702 | 1,037 | 1,028 | 672 | 388 | 393 |
| 12 | 191 | 204 | 200 | 180 | 268 | 506 | 779 | 1,076 | 927 | 630 | 384 | 363 |
| 13 | 182 | 209 | 191 | 174 | 262 | 475 | 840 | 1,174 | 925 | 594 | 366 | 346 |
| 14 | 185 | 200 | 190 | 189 | 259 | 439 | 890 | 1,121 | 1,066 | 545 | 349 | 334 |
| 15 | 184 | 197 | 190 | 210 | 258 | 409 | 846 | 1,037 | 1,130 | 496 | 335 | 327 |
| 16 | 178 | 206 | 189 | 230 | 261 | 374 | 695 | 1,046 | 1,170 | 482 | 333 | 310 |
| 17 | 177 | 196 | 200 | 259 | 272 | 392 | 640 | 1,170 | 1,125 | 456 | 320 | 289 |
| 18 | 182 | 198 | 191 | 240 | 283 | 365 | 614 | 1,424 | 1,044 | 428 | 307 | 277 |
| 19 | 190 | 196 | 193 | 226 | 299 | 405 | 570 | 1,535 | 989 | 408 | 298 | 267 |
| 20 | 182 | 198 | 197 | 244 | 285 | 442 | 526 | 1,306 | 901 | 390 | 292 | 262 |
| 21 | 184 | 193 | 203 | 246 | 277 | 402 | 551 | 1,275 | 816 | 420 | 282 | 255 |
| 22 | 202 | 196 | 188 | 237 | 287 | 398 | 575 | 1,398 | 826 | 470 | 281 | 251 |
| 23 | 198 | 187 | 188 | 244 | 297 | 381 | 580 | 1,626 | 862 | 494 | 312 | 249 |
| 24 | 203 | 196 | 174 | 246 | 334 | 423 | 617 | 1,799 | 868 | 569 | 330 | 254 |
| 25 | 200 | 193 | 190 | 243 | 380 | 373 | 767 | 1,826 | 879 | 633 | 364 | 244 |
| 26 | 195 | 190 | 196 | 245 | 379 | 359 | 873 | 1,771 | 850 | 571 | 444 | 237 |
| 27 | 186 | 189 | 186 | 242 | 395 | 341 | 994 | 1,572 | 804 | 521 | 620 | 233 |
| 28 | 192 | 183 | 177 | 245 | 417 | 343 | 1,047 | 1,484 | 784 | 522 | 970 | 226 |
| 29 | 214 | 189 | 183 | 243 | ..... | 355 | 1,068 | 1,420 | 727 | 531 | 1,488 | 222 |
| 30 | 205 | 192 | 189 | 219 | ..... | 359 | 975 | 1,221 | 638 | 559 | 1,257 | 235 |
| 31 | 213 | ..... | 195 | 237 | ..... | 436 | ..... | 1,121 | ..... | 570 | 1,135 | ..... |

*Monthly discharge of Kern River near Bakersfield, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet).[a] |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean.[a] | |
| October | 232 | 147 | 192 | 11,800 |
| November | 238 | 153 | 198 | 11,800 |
| December | 212 | 169 | 192 | 11,800 |
| January | 264 | 126 | 212 | 13,000 |
| February | 441 | 225 | 283 | 15,700 |
| March | 578 | 300 | 410 | 25,200 |
| April | 1,157 | 469 | 714 | 42,500 |
| May | 1,976 | 644 | 1,200 | 73,800 |
| June | 1,970 | 602 | 1,020 | 60,700 |
| July | 778 | 379 | 568 | 34,900 |
| August | 1,650 | 273 | 512 | 31,500 |
| September | 1,233 | 213 | 426 | 25,300 |
| The year | 1,976 | 126 | 494 | 358,000 |

[a] Computed by engineers of the U. S. Geological Survey.

NOTE.—Maximum and minimum discharge taken from recording gage record sheet; the figures do not represent mean daily discharge.

## KERN RIVER POWER CO.'S CANAL AT KERNVILLE, CAL.[1]

LOCATION.—At the Beattie ranch, 1,000 feet below intake, and about three-fourth mile below Kernville.

RECORDS AVAILABLE.—January 1, 1910, to September 30, 1913.

GAGE.—Water-stage recorder on left bank at short flume. A vertical staff is located just below flume in concrete-lined section of canal.

DISCHARGE MEASUREMENTS.—Made in flume at recording gage.

ACCURACY.—Results considered excellent.

COOPERATION.—Records of daily discharge furnished by Kern River Power Co., through H. A. Barre, chief engineer.

*Discharge measurements of Kern River Power Co.'s Canal at Kernville, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | 1912. | *Feet.* | *Sec.-ft.* |
| Mar. 26 | 4.70 | 285 | Sept. 23 | 4.14 | 243 |
| June 11 | 7.68 | 585 | | | |

*Daily discharge, in second-feet, of Kern River Power Co.'s Canal at Kernville, Cal., for the year ending Sept. 30, 1913:*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 176 | 183 | 194 | 180 | 217 | 259 | 508 | 589 | 591 | 520 | 408 | 408 |
| 2 | 173 | 183 | 187 | 178 | 219 | 255 | 520 | 0 | 591 | 525 | 408 | 404 |
| 3 | 183 | 0 | 178 | 178 | 217 | 259 | 506 | 151 | 591 | 600 | 600 | 589 |
| 4 | 186 | 183 | 178 | 178 | 215 | 261 | 499 | 245 | 601 | 600 | 595 | 584 |
| 5 | 188 | 188 | 183 | 178 | 213 | 281 | 488 | 0 | 601 | 600 | 506 | 535 |
| 6 | 188 | 183 | 173 | 134 | 215 | 307 | 0 | 596 | 601 | 600 | 0 | 483 |
| 7 | 250 | 188 | 157 | 44 | 222 | 337 | 0 | 591 | 601 | 600 | 0 | 444 |
| 8 | 202 | 203 | 183 | 57 | 237 | 347 | 0 | 591 | 601 | 600 | 396 | 414 |
| 9 | 204 | 198 | 178 | 165 | 267 | 355 | 0 | 591 | 601 | 600 | 573 | 389 |
| 10 | 203 | 0 | 178 | 193 | 249 | 360 | 0 | 591 | 601 | 600 | 375 | 362 |
| 11 | 198 | 198 | 174 | 173 | 239 | 370 | 0 | 591 | 601 | 596 | 350 | 344 |
| 12 | 192 | 198 | 174 | 177 | 233 | 372 | 0 | 591 | 601 | 573 | 342 | 316 |
| 13 | 194 | 198 | 183 | 137 | 233 | 333 | 0 | 586 | 601 | 539 | 316 | 411 |
| 14 | 189 | 202 | 183 | 159 | 233 | 313 | 0 | 591 | 601 | 494 | 297 | 318 |
| 15 | 187 | 205 | 183 | 171 | 235 | 299 | 0 | 589 | 601 | 460 | 282 | 309 |
| 16 | 183 | 203 | 187 | 213 | 239 | 293 | 0 | 591 | 601 | 423 | 270 | 294 |
| 17 | 183 | 198 | 183 | 215 | 247 | 293 | 0 | 591 | 601 | 384 | 261 | 282 |
| 18 | 183 | 196 | 193 | 101 | 259 | 305 | 0 | 590 | 601 | 362 | 254 | 268 |
| 19 | 183 | 196 | 194 | 203 | 259 | 351 | 0 | 591 | 601 | 370 | 245 | 260 |
| 20 | 0 | 192 | 183 | 182 | 229 | 321 | 165 | 591 | 601 | 404 | 241 | 254 |
| 21 | 180 | 196 | 178 | 191 | 196 | 316 | 263 | 591 | 601 | 410 | 248 | 252 |
| 22 | 180 | 188 | 167 | 198 | 234 | 312 | 263 | 589 | 601 | 460 | 250 | 251 |
| 23 | 183 | 183 | 150 | 201 | 0 | 322 | 0 | 591 | 600 | 526 | 272 | 0 |
| 24 | 183 | 188 | 146 | 196 | 0 | 305 | 372 | 589 | 600 | 600 | 345 | 248 |
| 25 | 183 | 188 | 150 | 196 | 0 | 316 | 270 | 596 | 600 | 600 | 343 | 246 |
| 26 | 183 | 183 | 188 | 208 | 0 | 299 | 415 | 601 | 600 | 530 | 394 | 244 |
| 27 | 0 | 183 | 174 | 215 | 287 | 299 | 458 | 601 | 600 | 502 | 448 | 243 |
| 28 | 183 | 188 | 183 | 217 | 279 | 311 | 506 | 591 | 600 | 496 | 413 | 237 |
| 29 | 183 | 183 | 170 | 217 | ..... | 329 | 550 | 591 | 600 | 517 | 428 | 236 |
| 30 | 188 | 183 | 180 | 219 | ..... | 341 | 584 | 591 | 555 | 540 | 407 | 222 |
| 31 | 188 | ..... | 176 | 217 | ..... | 418 | ..... | 591 | ..... | 467 | 428 | ..... |

NOTE.—Water was turned out of canal on days for which no discharge is given.

[1] The canal diverts from Kern River about half a mile below Kernville. Its total length is about 10 miles, and it is concrete-lined except where flume is required. The power house is in the canyon at Borel, where the water is returned to the river. The power is transmitted to Los Angeles.

*Monthly discharge of Kern River Power Co.'s Canal at Kernville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 250 | 0 | 177 | 10,900 |
| November | 205 | 0 | 179 | 10,700 |
| December | 194 | 146 | 177 | 10,900 |
| January | 219 | 44 | 179 | 11,000 |
| February | 287 | 0 | 203 | 11,300 |
| March | 418 | 255 | 317 | 19,500 |
| April | 584 | 0 | 212 | 12,600 |
| May | 601 | 0 | 528 | 32,500 |
| June | 601 | 555 | 598 | 35,600 |
| July | 600 | 362 | 519 | 31,900 |
| August | 600 | 0 | 339 | 20,800 |
| September | 589 | 0 | 328 | 19,500 |
| The year | 601 | 0 | 314 | 227,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

## SOUTH FORK OF KERN RIVER NEAR ONYX, CAL.

LOCATION.—In the NE. ¼ SW. ¼ sec. 24, T. 25 S., R. 35 E., three fourths mile north of the Kernville-Walker Pass road, on the Rankin ranch, about 5 miles northeast of Onyx.

RECORDS AVAILABLE.—September 12, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to willow stump. November 16, 1912, an inclined staff was installed at same location and datum.

CHANNEL.—Sand and fine gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 60 feet below gage or by wading.

DIVERSIONS.—Three small irrigation ditches head above the station.

ACCURACY.—Rating curve fairly well defined; results fair.

*Discharge measurements of South Fork of Kern River near Onyx, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 13 | 1.64 | 27 | Mar. 23 | [b] 2.02 | 59 |
| Mar. 22 | [a] 2.18 | 85 | June 10 | 2.50 | 107 |

[a] Débris on control for one-third width.
[b] Débris removed from control before gaging.

*Daily gage height, in feet, of South Fork of Kern River near Onyx, Cal., for the year ending Sept. 30, 1913.*

[L. E. Rankin, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.41 | 1.60 | 1.63 | 1.60 | 1.65 | 1.90 | 2.5 | 3.45 | 3.3 | 1.9 | 1.8 | 2.15 |
| 2 | 1.41 | 1.60 | 1.65 | 1.60 | 1.65 | 2.00 | 2.5 | 3.2 | 3.3 | 1.7 | 1.8 | 2.15 |
| 3 | 1.50 | 1.60 | 1.65 | 1.56 | 1.65 | 2.35 | 2.9 | 3.0 | 3.3 | 1.7 | 1.8 | 2.1 |
| 4 | 1.65 | 1.60 | 1.65 | 1.56 | 1.65 | 2.35 | 2.9 | 3.0 | 3.3 | 1.7 | 1.8 | 2.0 |
| 5 | 1.65 | 1.60 | 1.65 | 1.62 | 1.65 | 2.35 | 2.9 | 3.0 | 3.4 | 1.7 | 1.8 | 2.0 |
| 6 | 1.65 | 1.60 | 1.65 | 1.62 | 1.65 | 2.35 | 3.0 | 3.0 | 3.4 | 1.7 | 1.8 | 2.0 |
| 7 | 1.66 | 1.60 | 1.65 | 1.62 | 1.65 | 2.35 | 3.0 | 3.0 | 3.5 | 1.5 | 1.8 | 1.7 |
| 8 | 1.66 | 1.65 | 1.65 | 1.62 | 1.65 | 2.35 | 3.0 | 2.8 | 3.5 | 1.5 | 1.8 | 1.7 |
| 9 | 1.66 | 1.65 | 1.65 | 1.62 | 1.70 | 2.35 | 3.0 | 2.8 | 3.0 | 1.5 | 1.8 | 1.7 |
| 10 | 1.65 | 1.65 | 1.65 | 1.62 | 1.70 | 2.35 | 3.1 | 2.8 | 2.5 | 1.5 | 1.7 | 1.7 |
| 11 | 1.65 | 1.63 | 1.61 | 1.62 | 1.70 | 2.30 | 3.1 | 2.8 | 2.45 | 1.5 | 1.7 | 1.7 |
| 12 | 1.65 | 1.63 | 1.61 | 1.62 | 1.70 | 2.30 | 3.1 | 2.8 | 2.4 | 1.5 | 1.6 | 1.7 |
| 13 | 1.65 | 1.63 | 1.61 | 1.62 | 1.70 | 2.30 | 3.1 | 2.8 | 2.35 | 1.5 | 1.6 | 1.7 |
| 14 | 1.65 | 1.63 | 1.61 | 1.62 | 1.70 | 2.30 | 3.2 | 2.4 | 2.3 | 1.5 | 1.5 | 1.7 |
| 15 | 1.65 | 1.63 | 1.61 | 1.62 | 1.70 | 2.30 | 3.3 | 2.4 | 2.2 | 1.5 | 1.5 | 1.7 |
| 16 | 1.65 | 1.63 | 1.61 | 1.63 | 1.75 | 2.30 | 3.3 | 2.4 | 2.15 | 1.5 | 1.45 | 1.7 |
| 17 | 1.65 | 1.63 | 1.61 | 1.64 | 1.80 | 2.30 | 3.3 | 2.4 | 1.95 | 1.5 | 1.5 | 1.6 |
| 18 | 1.65 | 1.63 | 1.61 | 1.64 | 1.85 | 2.30 | 3.35 | 2.4 | 1.95 | 1.5 | 1.5 | 1.6 |
| 19 | 1.65 | 1.63 | 1.61 | 1.64 | 1.85 | 2.30 | 3.35 | 2.4 | 1.9 | 1.4 | 1.5 | 1.6 |
| 20 | 1.65 | 1.63 | 1.61 | 1.64 | 1.85 | 2.30 | 3.35 | 2.4 | 1.8 | 1.8 | 1.5 | 1.6 |
| 21 | 1.65 | 1.63 | 1.61 | 1.64 | 1.85 | 2.20 | 3.35 | 2.4 | 1.8 | 1.85 | 1.5 | 1.6 |
| 22 | 1.65 | 1.63 | 1.61 | 1.64 | 1.85 | 2.20 | 3.3 | 2.4 | 1.8 | 1.85 | 1.5 | 1.6 |
| 23 | 1.65 | 1.63 | 1.61 | 1.64 | 1.90 | 2.20 | 3.3 | 2.4 | 1.79 | 1.9 | 1.5 | 1.6 |
| 24 | 1.65 | 1.63 | 1.61 | 1.64 | 1.90 | 2.20 | 3.3 | 2.4 | 1.79 | 1.9 | 2.0 | 1.6 |
| 25 | 1.68 | 1.63 | 1.61 | 1.64 | 1.90 | 2.20 | 3.3 | 2.4 | 1.79 | 1.8 | 2.0 | 1.6 |
| 26 | 1.68 | 1.63 | 1.61 | 1.65 | 1.90 | 2.20 | 3.3 | 2.4 | 1.85 | 1.8 | 2.4 | 1.6 |
| 27 | 1.68 | 1.63 | 1.61 | 1.65 | 1.90 | 2.10 | 3.4 | 2.4 | 1.9 | 1.8 | 2.4 | 1.6 |
| 28 | 1.65 | 1.63 | 1.61 | 1.65 | 1.90 | 2.10 | 3.4 | 2.45 | 2.05 | 1.9 | 2.6 | 1.6 |
| 29 | 1.65 | 1.63 | 1.61 | 1.65 | ..... | 2.10 | 3.45 | 2.45 | 2.0 | 1.9 | 2.6 | 1.6 |
| 30 | 1.62 | 1.63 | 1.61 | 1.65 | ..... | 2.10 | 3.45 | 2.45 | 1.9 | 1.8 | 2.7 | 1.6 |
| 31 | 1.60 | ..... | 1.61 | 1.65 | ..... | 2.10 | ..... | 2.45 | ..... | 1.8 | 2.7 | ..... |

*Daily discharge, in second-feet, of South Fork of Kern River near Onyx, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 24 | 26 | 24 | 27 | 47 | 123 | 358 | 307 | 47 | 38 | 74 |
| 2 | 14 | 24 | 27 | 24 | 27 | 57 | 123 | 277 | 307 | 30 | 38 | 74 |
| 3 | 19 | 24 | 27 | 22 | 27 | 100 | 203 | 225 | 307 | 30 | 38 | 68 |
| 4 | 27 | 24 | 27 | 22 | 27 | 100 | 203 | 225 | 307 | 30 | 38 | 57 |
| 5 | 27 | 24 | 27 | 25 | 27 | 100 | 203 | 225 | 340 | 30 | 38 | 57 |
| 6 | 27 | 24 | 27 | 25 | 27 | 100 | 225 | 225 | 340 | 30 | 38 | 57 |
| 7 | 28 | 24 | 27 | 25 | 27 | 100 | 225 | 225 | 375 | 19 | 38 | 30 |
| 8 | 28 | 27 | 27 | 25 | 27 | 100 | 225 | 181 | 375 | 19 | 38 | 30 |
| 9 | 28 | 27 | 27 | 25 | 30 | 100 | 225 | 181 | 225 | 19 | 38 | 30 |
| 10 | 27 | 27 | 27 | 25 | 30 | 100 | 250 | 181 | 123 | 19 | 30 | 30 |
| 11 | 27 | 26 | 25 | 25 | 30 | 93 | 250 | 181 | 115 | 19 | 30 | 30 |
| 12 | 27 | 26 | 25 | 25 | 30 | 93 | 250 | 181 | 107 | 19 | 24 | 30 |
| 13 | 27 | 26 | 25 | 25 | 30 | 93 | 250 | 181 | 100 | 19 | 24 | 30 |
| 14 | 27 | 26 | 25 | 25 | 30 | 93 | 277 | 107 | 93 | 19 | 19 | 30 |
| 15 | 27 | 26 | 25 | 25 | 30 | 93 | 307 | 107 | 80 | 19 | 19 | 30 |
| 16 | 27 | 26 | 25 | 26 | 34 | 93 | 307 | 107 | 74 | 19 | 16 | 30 |
| 17 | 27 | 26 | 25 | 26 | 38 | 93 | 307 | 107 | 52 | 19 | 19 | 24 |
| 18 | 27 | 26 | 25 | 26 | 42 | 93 | 324 | 107 | 52 | 19 | 19 | 24 |
| 19 | 27 | 26 | 25 | 26 | 42 | 93 | 324 | 107 | 47 | 14 | 19 | 24 |
| 20 | 27 | 26 | 25 | 26 | 42 | 93 | 324 | 107 | 38 | 38 | 19 | 24 |
| 21 | 27 | 26 | 25 | 26 | 42 | 80 | 324 | 107 | 38 | 42 | 19 | 24 |
| 22 | 27 | 26 | 25 | 26 | 42 | 80 | 307 | 107 | 38 | 42 | 19 | 24 |
| 23 | 27 | 26 | 25 | 26 | 47 | 80 | 307 | 107 | 37 | 47 | 19 | 24 |
| 24 | 27 | 26 | 25 | 26 | 47 | 80 | 307 | 107 | 37 | 47 | 57 | 24 |
| 25 | 29 | 26 | 25 | 26 | 47 | 80 | 307 | 107 | 37 | 38 | 57 | 24 |
| 26 | 29 | 26 | 25 | 27 | 47 | 80 | 307 | 107 | 42 | 38 | 107 | 24 |
| 27 | 29 | 26 | 25 | 27 | 47 | 68 | 340 | 107 | 47 | 38 | 107 | 24 |
| 28 | 27 | 26 | 25 | 27 | 47 | 68 | 340 | 115 | 62 | 47 | 141 | 24 |
| 29 | 27 | 26 | 25 | 27 | ..... | 68 | 358 | 115 | 57 | 47 | 141 | 24 |
| 30 | 25 | 26 | 25 | 27 | ..... | 68 | 358 | 115 | 47 | 38 | 161 | 24 |
| 31 | 24 | ..... | 25 | 27 | ..... | 68 | ..... | 115 | ..... | 38 | 161 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve.

*Monthly discharge of South Fork of Kern River near Onyx, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 29 | 14 | 26.0 | 1,600 | C. |
| November | 27 | 24 | 25.6 | 1,520 | C. |
| December | 27 | 25 | 25.6 | 1,570 | C. |
| January | 27 | 22 | 25.5 | 1,570 | C. |
| February | 47 | 27 | 35.4 | 1,970 | C. |
| March | 100 | 47 | 85.6 | 5,260 | C. |
| April | 358 | 123 | 273 | 16,200 | B. |
| May | 358 | 107 | 155 | 9,530 | B. |
| June | 375 | 37 | 140 | 8,330 | C. |
| July | 47 | 14 | 30.3 | 1,860 | C. |
| August | 161 | 16 | 50.6 | 3,110 | C. |
| September | 74 | 24 | 34.1 | 2,030 | C. |
| The year | 375 | 14 | 75.4 | 54,600 | |

## SOUTH FORK OF KERN RIVER AT ISABELLA, CAL.

LOCATION.—In the NW. ¼ sec. 20, T. 26 S., R. 33 E., at highway bridge at Isabella, half a mile above junction with Kern River.

RECORDS AVAILABLE.—October 5, 1910, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to middle span of bridge.

CHANNEL.—Sand; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

DIVERSIONS.—Twenty-eight irrigation ditches, varying in capacity from 8 to 20 second-feet; head above the station.

COOPERATION.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates withheld for additional measurements.

*Discharge measurements of South Fork of Kern River at Isabella, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Mar. 19 | 0.75 | 88 | Sept. 23 | 0.34 | 14 |
| June 11 | .74 | 72 | | | |

*Daily gage height, in feet, of South Fork of Kern River at Isabella, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 0.9 | | | | 0.3 | | |
| 2 | | | | 0.4 | | | 1.0 | | | | | |
| 3 | 0.3 | | 0.3 | | 0.5 | .9 | | 1.0 | | .3 | | |
| 4 | | | | | | | | | | | | |
| 5 | | 0.3 | | | | | 1.2 | | | | | |
| 6 | | | | .4 | | .9 | | | | | | |
| 7 | | | | | .6 | | | .8 | | | | |
| 8 | | | .3 | | | | 1.2 | | 0.3 | | | |
| 9 | .4 | | | .5 | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | .7 | | | | .7 | | | |
| 12 | | .3 | | | | | | | | | | |
| 13 | | | | | | | 1.2 | | | | | |
| 14 | | | | | | | | .5 | .3 | | | |
| 15 | | | .3 | | .6 | | 1.1 | | | | | |
| 16 | | | | .5 | | | | | | | | |
| 17 | | .3 | | | | | | | | | | |
| 18 | | | | | .7 | .8 | | | .3 | | | |
| 19 | | | | | | .75 | | | | | | |
| 20 | .4 | | | .5 | | | 1.1 | | | | | |
| 21 | | | | | .7 | | | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | .3 | | | | | 1.1 | | | | | 0.3 |
| 24 | | | | .5 | | | | | | | | |
| 25 | | | .3 | | | | | | .3 | | | |
| 26 | | | | | 1.0 | | | | | | | |
| 27 | | | | .5 | 1.2 | | 1.3 | .3 | | | | |
| 28 | | | .3 | | 1.1 | | | | | | | |
| 29 | | | | .5 | | | | | | | | |
| 30 | .4 | | .3 | | | | 1.1 | .3 | .2 | | | |
| 31 | | | | .5 | | .8 | | | | .2 | | |

## ERSKINE CREEK NEAR BOEFISH, CAL.

LOCATION.—In the SW. ¼ SW. ¼ sec. 24, T. 27 S., R. 33 E., 700 feet west of Otto Liebel's residence, 4 miles above station formerly maintained near Isabella, and 6 miles southeast of Bodfish.

RECORDS AVAILABLE.—April 1 to June 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on left bank.

CHANNEL.—Sand and gravel.

DISCHARGE MEASUREMENTS.—Made by wading.

DIVERSIONS.—A small ditch diverts water for irrigation about 5 miles above the station.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

Estimates withheld until additional measurements can be secured.

The following discharge measurement was made by H. J. Tompkins:

March 28, 1913: Gage height, 1.80 feet; discharge, 3.0 second-feet.

*Daily gage height, in feet, of Erskine Creek near Bodfish, Cal., for the year ending Sept. 30, 1913.*

| Day. | Apr. | May. | June. | Day. | Apr. | May. | June. | Day. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.05 | 1.82 | 2.11 | 11 | 1.90 | 1.70 | 1.70 | 21 | 1.84 | 1.64 | 1.59 |
| 2 | 2.05 | 1.80 | 1.90 | 12 | 1.90 | 1.70 | 1.66 | 22 | 1.82 | 1.62 | 1.59 |
| 3 | 1.95 | 1.80 | 1.90 | 13 | 1.85 | 1.70 | 1.62 | 23 | 1.84 | 1.62 | 1.59 |
| 4 | 1.90 | 1.80 | 1.80 | 14 | 1.82 | 1.68 | 1.61 | 24 | 1.85 | 1.62 | 1.59 |
| 5 | 1.90 | 1.78 | 1.81 | 15 | 1.80 | 1.68 | 1.60 | 25 | 1.81 | 1.61 | 1.59 |
| 6 | 1.90 | 1.75 | 2.30 | 16 | 1.80 | 1.68 | 1.60 | 26 | 1.80 | 1.60 | 1.56 |
| 7 | 1.90 | 1.72 | 1.90 | 17 | 1.80 | 1.68 | 1.60 | 27 | 1.81 | 1.60 | 1.56 |
| 8 | 1.90 | 1.72 | 1.90 | 18 | 1.84 | 1.68 | 1.60 | 28 | 1.85 | 1.71 | 1.54 |
| 9 | 1.90 | 1.70 | 1.86 | 19 | 1.81 | 1.65 | 1.59 | 29 | 1.85 | 1.69 | 1.51 |
| 10 | 1.90 | 1.70 | 1.80 | 20 | 1.80 | 1.65 | 1.59 | 30 | 1.85 | 1.64 | 1.50 |
| | | | | | | | | 31 | | 1.61 | |

## ERSKINE CREEK NEAR ISABELLA, CAL.

LOCATION.—In the NW. ¼ sec. 9, T. 27 S., R. 33 E., at ford at mouth of canyon, 2¾ miles above junction with Kern River, 5 miles south of Isabella.

RECORDS AVAILABLE.—February 7, 1911, to March 31, 1913, when station was discontinued. (Record is fragmentary.)

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to willow tree, about 80 feet above ford on left bank.

CHANNEL.—Sand and gravel. Two channels at high stages.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

DIVERSIONS.—A small ditch diverts water for irrigation about 9 miles above the station.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

Estimates withheld on account of insufficient data.

*Discharge measurements of Erskine Creek near Isabella, Cal., during the years 1913–1914.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Mar. 28, 1913 | 2.65 | 3.6 |
| Mar. 21, 1914 | 2.82 | 12 |
| May 25, 1914 | 2.58 | 3.8 |

*Daily gage height, in feet, of Erskine Creek near Isabella, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 16 | | | | 1.4 | | |
| 2 | | | | | | | 17 | | | | | | |
| 3 | | | | | | | 18 | | | | | | |
| 4 | | | | | | | 19 | | | | | | |
| 5 | | 1.2 | | | | | 20 | 1.2 | | | | | |
| 6 | | | | | 1.4 | | 21 | | | | | | |
| 7 | | | | | | | 22 | | | | | | |
| 8 | | | 1.2 | | | | 23 | | | | | | |
| 9 | | | | | | | 24 | | | | | | |
| 10 | | | | | | | 25 | | | | | | |
| 11 | | | | | | | 26 | | | | | | |
| 12 | | | | | | | 27 | | | | | 2.1 | |
| 13 | | | | | | | 28 | | | | | | 2.65 |
| 14 | | | | | | | 29 | | | | | | |
| 15 | | 1.2 | | | | | 30 | 1.3 | | 1.2 | | | |
| | | | | | | | 31 | | | | | | 2.4 |

### BASIN CREEK NEAR HAVILAH, CAL.

LOCATION.—At highway bridge on Caliente-Havilah road at Rankin ranch, in Walkers Basin, about 10 miles southwest of Havilah.

RECORDS AVAILABLE.—February 8, 1911, to September 30, 1913, when station was discontinued (fragmentary).

DRAINAGE AREA.—36.2 square miles.

GAGE.—Vertical staff on left bank at bridge.

CHANNEL.—Sand and gravel; will shift at high water.

DISCHARGE MEASUREMENTS.—Made by wading below bridge.

DIVERSIONS.—Rankin ditch diverts water above the station.

ACCURACY.—Rating curve fairly well defined; results fair for days for which gage heights are recorded.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following discharge measurement was made by H. J. Tompkins:
Mar. 30, 1913: Gage height, 0.63 feet; discharge, 4.2 second-feet.

*Daily gage height, in feet, and discharge, in second-feet, of Basin Creek near Havilah, Cal., for the year ending Sept. 30, 1913.*

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| Nov. 19 | 0.60 | 3.5 | Mar. 27 | 0.65 | 4.5 | May 8 | 0.40 | 1.0 |
| Dec. 5 | .60 | 3.5 | 30 | .63 | 4.0 | 29 | .60 | 3.5 |
| 7 | .62 | 4.0 | Apr. 15 | .65 | 4.5 | June 5 | .60 | 3.5 |
| Jan. 16 | .82 | 8.5 | May 6 | .40 | 1.0 | Sept. 24 | .45 | 1.5 |
| Mar. 26 | .65 | 4.5 | | | | | | |

### WHITE RIVER NEAR HOT SPRINGS, CAL.

LOCATION.—On Vaughn ranch, 1 mile east of White River-Hot Springs stage road, about 5 miles southwest of Hot Springs.

RECORDS AVAILABLE.—January 18, 1911, to September 30, 1913 when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on right bank fastened to a willow tree about 150 feet above observer's house.

CHANNEL.—Sand and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made by wading.

ACCURACY.—Results only fair on account of the limited number of discharge measurements.

COOPERATION.—Gage-height record furnished through United States Forest Service by David Vaughn.

The following discharge measurement was made by H. J. Tompkins:
April 8, 1913: Gage height, 1.63 feet; discharge, 3.5 second-feet.

*Daily gage height, in feet, of White River near Hot Springs, Cal., for the year ending Sept. 30, 1913.*

[David Vaughn, observer.]

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.5 | 1.6 | 1.7 | 1.6 | 1.55 | 1.45 | 1.3 |
| 2 | ..... | 1.5 | 1.6 | 1.65 | 1.6 | 1.55 | 1.45 | 1.3 |
| 3 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 1.4 | 1.25 |
| 4 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.55 | ..... | 1.2 |
| 5 | 1.5 | 1.5 | 1.55 | 1.6 | 1.6 | 1.55 | 1.4 | ..... |
| 6 | 1.45 | 1.5 | 1.55 | 1.6 | 1.6 | 1.5 | 1.35 | ..... |
| 7 | 1.4 | 1.5 | 1.55 | 1.6 | 1.6 | 1.5 | 1.35 | ..... |
| 8 | 1.45 | 1.5 | 1.55 | 1.65 | 1.55 | 1.5 | 1.35 | ..... |
| 9 | 1.5 | 1.5 | 1.55 | 1.65 | 1.55 | 1.5 | 1.35 | ..... |
| 10 | 1.5 | 1.5 | 1.55 | 1.6 | 1.55 | 1.5 | 1.35 | ..... |
| 11 | 1.5 | 1.5 | 1.55 | 1.6 | 1.55 | 1.45 | 1.35 | ..... |
| 12 | 1.5 | 1.5 | 1.55 | 1.6 | 1.55 | 1.45 | 1.3 | ..... |
| 13 | 1.5 | 1.5 | 1.55 | 1.65 | 1.55 | 1.45 | 1.3 | ..... |
| 14 | 1.5 | 1.5 | 1.55 | 1.65 | 1.55 | 1.45 | 1.35 | ..... |
| 15 | 1.6 | 1.5 | 1.55 | 1.65 | 1.55 | 1.4 | 1.3 | ..... |
| 16 | 1.55 | 1.5 | 1.55 | 1.6 | 1.5 | 1.4 | 1.25 | ..... |
| 17 | 1.55 | 1.5 | 1.55 | 1.6 | 1.5 | 1.4 | 1.2 | ..... |
| 18 | 1.5 | 1.5 | 1.55 | 1.6 | 1.5 | 1.4 | ..... | ..... |
| 19 | 1.5 | 1.5 | 1.6 | 1.6 | 1.5 | 1.4 | ..... | ..... |
| 20 | 1.5 | 1.5 | 1.55 | 1.65 | 1.5 | 1.4 | ..... | ..... |
| 21 | 1.5 | 1.5 | 1.55 | 1.65 | 1.45 | 1.4 | 1.48 | ..... |
| 22 | 1.5 | 1.55 | 1.55 | 1.65 | 1.45 | 1.4 | 1.5 | ..... |
| 23 | 1.5 | 1.55 | 1.6 | 1.65 | 1.45 | 1.4 | 1.5 | ..... |
| 24 | 1.5 | 1.9 | 1.6 | 1.65 | 1.45 | 1.4 | 1.45 | ..... |
| 25 | 1.5 | 1.7 | 1.6 | 1.65 | 1.45 | 1.4 | 1.45 | ..... |
| 26 | 1.5 | 1.7 | 1.65 | 1.7 | 1.4 | 1.4 | 1.45 | ..... |
| 27 | 1.5 | 1.6 | 1.65 | 1.7 | 1.4 | 1.6 | 1.4 | ..... |
| 28 | 1.5 | 1.6 | 1.7 | 1.65 | 1.9 | 1.55 | 1.35 | ..... |
| 29 | 1.5 | ..... | 1.7 | 1.6 | 1.6 | 1.5 | 1.35 | ..... |
| 30 | 1.5 | ..... | 1.7 | 1.6 | 1.55 | 1.45 | 1.35 | ..... |
| 31 | 1.5 | ..... | 1.75 | ..... | 1.55 | ..... | 1.3 | ..... |

*Daily discharge, in second-feet, of White River near Hot Springs, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | | | | | | |
| 1 | ..... | 11 | 6.7 | ..... | 5.6 | 2.6 | 0.6 | ..... |
| 2 | ..... | 8.8 | 6.7 | ..... | 5.6 | 2.6 | .6 | ..... |
| 3 | ..... | 6.7 | 8.8 | ..... | 5.6 | 2.6 | .6 | ..... |
| 4 | ..... | 14 | 11 | ..... | 5.6 | 2.6 | .4 | ..... |
| 5 | ..... | 8.8 | 8.8 | ..... | 5.6 | 2.6 | .4 | ..... |
| 6 | ..... | 6.7 | 8.8 | ..... | 5.6 | 2.0 | .4 | ..... |
| 7 | ..... | 6.7 | 6.7 | ..... | 5.6 | 2.0 | .4 | ..... |
| 8 | ..... | 4.9 | 20 | ..... | 5.6 | 2.0 | .2 | ..... |
| 9 | ..... | 4.9 | 20 | ..... | 5.6 | 1.4 | .2 | ..... |
| 10 | ..... | 4.9 | 38 | ..... | 4.8 | 1.4 | .2 | ..... |
| 11 | ..... | 6.7 | 36 | ..... | 4.0 | 1.4 | .2 | ..... |
| 12 | ..... | 3.3 | 21 | ..... | 4.0 | 1.4 | .2 | ..... |
| 13 | ..... | 12 | 15 | ..... | 4.0 | 1.4 | .2 | ..... |
| 14 | ..... | 20 | 12 | 7.5 | 4.0 | 1.4 | .2 | ..... |
| 15 | ..... | 11 | 12 | 7.5 | 4.0 | 1.4 | .1 | ..... |
| 16 | ..... | 8.8 | 9.7 | 7.5 | 2.6 | 1.4 | .1 | ..... |
| 17 | ..... | 8.8 | 9.7 | 7.5 | 2.6 | 1.4 | .2 | ..... |
| 18 | 2.0 | 8.8 | 9.7 | 7.5 | 2.6 | 1.4 | .2 | ..... |
| 19 | 2.0 | 8.8 | 7.5 | 7.5 | 2.6 | 1.4 | .2 | ..... |
| 20 | 2.0 | 8.8 | 7.5 | 6.6 | 2.6 | 1.4 | .2 | ..... |
| 21 | 16 | 8.8 | 12 | 5.6 | 2.6 | 1.0 | .2 | ..... |
| 22 | 6.7 | 8.8 | 12 | 5.6 | 2.6 | 1.0 | .1 | ..... |
| 23 | 4.9 | 6.7 | 9.7 | 5.6 | 2.6 | 1.0 | .1 | ..... |
| 24 | 12 | 6.7 | 15 | 5.6 | 2.6 | 1.0 | .1 | ..... |
| 25 | 14 | 6.7 | 12 | 5.6 | 2.6 | 1.0 | .1 | .1 |
| 26 | 14 | 6.7 | 9.7 | 5.6 | 2.6 | .6 | .1 | .1 |
| 27 | 6.7 | 8.8 | 9.7 | 9.7 | 2.6 | .6 | .1 | .1 |
| 28 | 8.8 | 8.8 | ..... | 7.5 | 2.6 | .6 | .1 | .2 |
| 29 | 16 | ..... | ..... | 7.5 | 2.6 | .6 | 0 | .2 |
| 30 | 11 | ..... | ..... | 5.6 | 2.6 | .6 | 0 | .2 |
| 31 | 23 | ..... | ..... | ..... | 2.6 | ..... | 0 | ..... |

*Daily discharge, in second-feet, of White River near Hot Springs, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1911-12. | | | | | | | | | | |
| 1 | 0.4 | 0.2 | 0.2 | 1.4 | 2.6 | 1.4 | 3.3 | 4.9 | 3.3 | 2.0 |
| 2 | .4 | .2 | .2 | 1.4 | 2.6 | 1.4 | 3.3 | 4.9 | 3.3 | 2.0 |
| 3 | .6 | .2 | .2 | 1.4 | 2.6 | 1.4 | 3.3 | 4.9 | 3.3 | 2.0 |
| 4 | .6 | .2 | 1.4 | 1.4 | 2.6 | 1.4 | 3.3 | 4.9 | 3.3 | 2.0 |
| 5 | .6 | .2 | 1.4 | 1.4 | 2.6 | 1.4 | 4.1 | 4.9 | 2.6 | 2.0 |
| 6 | .6 | .2 | .6 | 1.4 | 2.6 | 2.0 | 4.1 | 4.1 | 2.6 | 1.5 |
| 7 | .4 | .2 | 1.4 | 1.0 | 2.6 | 2.6 | 4.1 | 5.3 | 2.6 | 1.5 |
| 8 | .4 | .2 | 1.4 | 1.0 | 2.0 | 2.6 | 3.3 | 4.9 | 2.6 | 1.5 |
| 9 | .4 | .2 | .6 | 1.0 | 2.0 | 2.6 | 15 | 4.9 | 2.6 | 1.5 |
| 10 | .4 | 5.6 | .6 | .6 | 2.0 | 2.6 | 11 | 5.8 | 2.6 | 1.5 |
| 11 | .4 | 2.6 | .6 | 5.6 | 2.0 | 4.0 | 16 | 5.8 | 2.6 | 1.5 |
| 12 | .4 | 1.4 | .6 | 4.0 | 2.0 | 4.0 | 16 | 5.8 | 2.6 | 1.5 |
| 13 | .4 | 1.4 | .6 | 4.0 | 2.0 | 2.6 | 14 | 6.7 | 2.6 | 1.5 |
| 14 | .4 | .6 | .4 | 2.6 | 2.0 | 2.6 | 11 | 6.7 | 2.6 | 1.5 |
| 15 | .4 | .6 | .4 | 2.6 | 2.0 | 2.6 | 8.8 | 6.7 | 3.3 | 1.5 |
| 16 | .4 | .6 | .4 | 2.6 | 2.0 | 12 | 8.8 | 7.8 | 3.3 | 1.5 |
| 17 | .4 | .6 | 2.6 | 2.6 | 2.0 | 8.8 | 8.8 | 6.7 | 2.6 | 1.0 |
| 18 | .4 | .6 | 2.0 | 2.6 | 2.0 | 6.7 | 7.8 | 5.8 | 2.6 | 1.0 |
| 19 | .4 | .6 | 2.0 | 2.6 | 2.0 | 4.9 | 7.8 | 4.9 | 2.0 | 1.0 |
| 20 | .4 | .6 | 1.4 | 2.6 | 2.0 | 6.7 | 6.7 | 4.9 | 2.0 | 1.0 |
| 21 | .2 | .4 | 1.4 | 2.6 | 1.4 | 4.9 | 6.7 | 4.9 | 2.0 | 1.0 |
| 22 | .2 | .4 | 1.4 | 2.6 | 1.4 | 4.1 | 6.7 | 4.9 | 2.0 | 1.0 |
| 23 | .2 | .4 | .6 | 2.6 | 1.4 | 3.3 | 6.7 | 4.9 | 2.0 | 1.0 |
| 24 | .2 | .4 | .6 | 2.6 | 1.4 | 3.3 | 6.7 | 4.9 | 2.0 | 1.0 |
| 25 | .2 | .4 | .6 | 2.6 | 1.4 | 3.3 | 6.7 | 4.9 | 2.0 | 1.0 |
| 26 | .2 | .4 | .6 | 4.0 | 1.4 | 3.3 | 6.3 | 4.9 | 2.0 | 1.0 |
| 27 | .2 | .4 | .6 | 4.0 | 1.4 | 4.9 | 5.8 | 4.9 | 2.0 | .6 |
| 28 | .4 | .2 | 1.4 | 4.0 | 1.4 | 4.9 | 5.8 | 4.1 | 2.0 | ..... |
| 29 | .4 | .2 | 1.4 | 3.3 | 1.4 | 3.3 | 5.8 | 4.1 | 2.0 | ..... |
| 30 | .4 | .2 | 2.6 | 3.3 | ..... | 3.3 | 5.8 | 4.1 | 2.0 | ..... |
| 31 | .4 | ..... | 1.4 | 2.6 | ..... | 3.3 | ..... | 3.3 | ..... | ..... |

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | |
| 1 | ..... | 3.3 | 3.1 | 4.6 | 3.1 | 2.4 | 1.3 | 0.2 |
| 2 | ..... | 3.3 | 3.1 | 3.8 | 3.1 | 2.4 | 1.3 | .2 |
| 3 | 3.3 | 3.3 | 3.1 | 3.1 | 3.1 | 3.1 | .8 | .1 |
| 4 | 3.3 | 3.3 | 3.1 | 3.1 | 3.1 | 2.4 | .8 | ..... |
| 5 | 3.3 | 3.3 | 2.4 | 3.1 | 3.1 | 2.4 | .8 | ..... |
| 6 | 2.6 | 3.3 | 2.4 | 3.1 | 3.1 | 1.8 | .5 | ..... |
| 7 | 2.0 | 3.3 | 2.4 | 3.1 | 3.1 | 1.8 | .5 | ..... |
| 8 | 2.6 | 3.3 | 2.4 | 3.8 | 2.4 | 1.8 | .5 | ..... |
| 9 | 3.3 | 3.3 | 2.4 | 3.8 | 2.4 | 1.8 | .5 | ..... |
| 10 | 3.3 | 3.3 | 2.4 | 3.1 | 2.4 | 1.8 | .5 | ..... |
| 11 | 3.3 | 3.3 | 2.4 | 3.1 | 2.4 | 1.3 | .5 | ..... |
| 12 | 3.3 | 3.3 | 2.4 | 3.1 | 2.4 | 1.3 | .2 | ..... |
| 13 | 3.3 | 3.3 | 2.4 | 3.8 | 2.4 | 1.3 | .2 | ..... |
| 14 | 3.3 | 3.3 | 2.4 | 3.8 | 2.4 | 1.3 | .5 | ..... |
| 15 | 4.9 | 3.3 | 2.4 | 3.8 | 2.4 | .8 | .2 | ..... |
| 16 | 4.1 | 3.3 | 2.4 | 3.1 | 1.8 | .8 | .1 | ..... |
| 17 | 4.1 | 3.3 | 2.4 | 3.1 | 1.8 | .8 | .0 | ..... |
| 18 | 3.3 | 3.3 | 2.4 | 3.1 | 1.8 | .8 | .0 | ..... |
| 19 | 3.3 | 3.3 | 3.1 | 3.1 | 1.8 | .8 | .0 | ..... |
| 20 | 3.3 | 3.3 | 2.4 | 3.8 | 1.8 | .8 | .0 | ..... |
| 21 | 3.3 | 3.3 | 2.4 | 3.8 | 1.3 | .8 | 1.6 | ..... |
| 22 | 3.3 | 4.1 | 2.4 | 3.8 | 1.3 | .8 | 1.8 | ..... |
| 23 | 3.3 | 4.1 | 3.1 | 3.8 | 1.3 | .8 | 1.8 | ..... |
| 24 | 3.3 | 11 | 3.1 | 3.8 | 1.3 | .8 | 1.3 | ..... |
| 25 | 3.3 | 4.6 | 3.1 | 3.8 | 1.3 | .8 | 1.3 | ..... |
| 26 | 3.3 | 4.6 | 3.8 | 4.6 | .8 | .8 | 1.3 | ..... |
| 27 | 3.3 | 3.1 | 3.8 | 4.6 | .8 | 3.1 | .8 | ..... |
| 28 | 3.3 | 3.1 | 4.6 | 3.8 | 8.3 | 2.4 | .5 | ..... |
| 29 | 3.3 | ..... | 4.6 | 3.1 | 3.1 | 1.8 | .5 | ..... |
| 30 | 3.3 | ..... | 4.6 | 3.1 | 2.4 | 1.3 | .5 | ..... |
| 31 | 3.3 | ..... | 5.4 | ..... | 2.4 | ..... | .2 | ..... |

NOTE.—Discharge determined from rating curves as follows: Fairly well defined, Jan. 18 to Mar. 10, 1911; poorly defined, Mar. 11, 1911, to Mar. 16, 1912; fairly well defined, Mar. 17, 1912, to Feb. 24, 1913, Feb. 25 to Sept. 30, 1913. Discharge July 3 and 4, 1912, and July 4, 1913, interpolated.

No record Mar. 28 to Apr. 13, 1911; no flow July 29 to Sept. 24, 1911; "little water ran in the mornings all summer, but not enough to make note of," July 28 to Sept. 30, 1912; probably dry Oct. 1 to Dec. 31, 1912; no flow Jan. 1 and 2, July 17 to 20 and Aug. 4 to Sept. 30, 1913.

*Monthly discharge of White River near Hot Springs, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| January 18–31 | 23 | 2.0 | 9.94 | 276 | C. |
| February | 20 | 3.3 | 8.44 | 469 | C. |
| March 1–27 | 38 | 6.7 | 13.2 | 707 | D. |
| April 14–30 | 9.7 | 5.6 | 6.80 | 229 | C. |
| May | 5.6 | 2.6 | 3.77 | 232 | C. |
| June | 2.6 | .6 | 1.46 | 87 | C. |
| July | .6 | .0 | .22 | 14 | |
| August | .0 | .0 | .0 | 0 | |
| September | .02 | .0 | .03 | 2 | |
| 1911–12. | | | | | |
| October | 0.6 | 0.2 | 0.38 | 23 | |
| November | 5.6 | .2 | .68 | 40 | |
| December | 2.6 | .2 | 1.02 | 63 | D. |
| January | 5.6 | .6 | 2.52 | 155 | C. |
| February | 2.6 | 1.4 | 1.96 | 113 | C. |
| March | 12 | 1.4 | 3.75 | 231 | C. |
| April | 16 | 3.3 | 7.45 | 443 | C. |
| May | 7.8 | 3.3 | 5.20 | 320 | B. |
| June | 3.3 | 2.0 | 2.50 | 149 | B. |
| July | 2.0 | .0 | 1.20 | 74 | D. |
| August | | .0 | .0 | 0 | |
| September | | .0 | .0 | 0 | |
| The year | 16 | .0 | 2.22 | 1,610 | |
| 1912–13. | | | | | |
| October | | 0.0 | 0.0 | 0 | |
| November | | .0 | .0 | 0 | |
| December | | .0 | .0 | 0 | |
| January | 4.9 | .0 | 3.10 | 191 | C. |
| February | 11 | 3.1 | 3.71 | 206 | C. |
| March | 5.4 | 2.4 | 2.98 | 183 | B. |
| April | 4.6 | 3.1 | 3.55 | 211 | B. |
| May | 8.3 | .8 | 2.39 | 147 | C. |
| June | 3.1 | .8 | 1.50 | 89 | C. |
| July | 1.8 | .0 | .67 | 41 | |
| August | .2 | .0 | .02 | 1 | |
| September | .0 | .0 | .0 | 0 | |
| The year | 11 | .0 | 1.48 | 1,070 | |

NOTE.—See note to table of daily discharge.

## DEER CREEK AT HOT SPRINGS, CAL.

LOCATION.—Below footbridge at forest supervisor's headquarters in Sequoia National Forest, about half a mile below Hot Springs. Tyler Creek enters about 2½ miles below station.

RECORDS AVAILABLE.—October 7, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on left bank, 30 feet below footbridge.

CHANNEL.—Sand, gravel, and boulders.

DISCHARGE MEASUREMENTS.—Made from highway bridge 100 feet below gage or by wading.

DIVERSIONS.—Irrigation ditches head above station.

ACCURACY.—Rating curve fairly well defined; results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

The following discharge measurement was made by H. J. Tompkins:

Apr. 7, 1913: Gage height, 0.58 foot; discharge, 6.3 second-feet.

*Daily gage height, in feet, of Deer Creek at Hot Springs, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.36 | 0.42 | 0.53 | 0.51 | 0.50 | 0.50 | 0.62 | 0.60 | 0.57 | 0.41 | 0.33 | 0.41 |
| 2 | .37 | .43 | .53 | ..... | .50 | .51 | .60 | .59 | .55 | .40 | .35 | .40 |
| 3 | .37 | .44 | .53 | .50 | .50 | .50 | .60 | .58 | .55 | .40 | .34 | .38 |
| 4 | .37 | .44 | .54 | .51 | .50 | ..... | .62 | .58 | .51 | .40 | .34 | .38 |
| 5 | .39 | .47 | .54 | .47 | .50 | .58 | .67 | .59 | .50 | .30 | .32 | .37 |
| 6 | .38 | .47 | .52 | .41 | .50 | ..... | .63 | .59 | .50 | .22 | .33 | .37 |
| 7 | .38 | .47 | .52 | .47 | .50 | .56 | .60 | .52 | .50 | .27 | .31 | .36 |
| 8 | .38 | .47 | .52 | .49 | .59 | .53 | .60 | .52 | .49 | .29 | .32 | .36 |
| 9 | .37 | .45 | .57 | .50 | .53 | .51 | .60 | .51 | .50 | .30 | .32 | .35 |
| 10 | .38 | .49 | .53 | .51 | .52 | .52 | .63 | .50 | .50 | .32 | .31 | .33 |
| 11 | .38 | .52 | .53 | .49 | .50 | .53 | .64 | .55 | .50 | .31 | .32 | .33 |
| 12 | .38 | .49 | .53 | .51 | .50 | .54 | .63 | .55 | .49 | .31 | .29 | .34 |
| 13 | .38 | .50 | .53 | .51 | .50 | .53 | .63 | .55 | .48 | .30 | .25 | .34 |
| 14 | .37 | .50 | .53 | .52 | .50 | .50 | .63 | .54 | .47 | .30 | .24 | .33 |
| 15 | .37 | .49 | .60 | .52 | .50 | .52 | .60 | .51 | .47 | .31 | .24 | .33 |
| 16 | .38 | .49 | .55 | .56 | .50 | .53 | .60 | .50 | .45 | .31 | .24 | .32 |
| 17 | .37 | .50 | .57 | .56 | .50 | .53 | .61 | .50 | .45 | .31 | .25 | .31 |
| 18 | .37 | .50 | .56 | .52 | .50 | .59 | .60 | .50 | .45 | .31 | .27 | .31 |
| 19 | .37 | .52 | .54 | .54 | .50 | .61 | .60 | .50 | .43 | .31 | .27 | .31 |
| 20 | .39 | .55 | .55 | .52 | .50 | .58 | .61 | .50 | .43 | .30 | .28 | .32 |
| 21 | .40 | .56 | .52 | .50 | .50 | .55 | .61 | .50 | .42 | .37 | .31 | .33 |
| 22 | .40 | .56 | .51 | .48 | .49 | .58 | .62 | .50 | .42 | .35 | .29 | .35 |
| 23 | .40 | .52 | .51 | .48 | .50 | .58 | .64 | .50 | .41 | .37 | .32 | .36 |
| 24 | .40 | .52 | .51 | .48 | .76 | .59 | .66 | .50 | .41 | .35 | .31 | .35 |
| 25 | .41 | .52 | .51 | .50 | .61 | .58 | .66 | .47 | .40 | .35 | .30 | .35 |
| 26 | .40 | .52 | .51 | .50 | .55 | .50 | .68 | .48 | .38 | .36 | .30 | .35 |
| 27 | .40 | .52 | .51 | .50 | .55 | .58 | .66 | .46 | .51 | .37 | .54 | .35 |
| 28 | .41 | .52 | .48 | .50 | .50 | .60 | .65 | .78 | .45 | .38 | .53 | .36 |
| 29 | .42 | .53 | .50 | .50 | ..... | .60 | .64 | .60 | .42 | .37 | .47 | .37 |
| 30 | .41 | .53 | .52 | .50 | ..... | .62 | .61 | .60 | .40 | .35 | .41 | .38 |
| 31 | .41 | ..... | .50 | .50 | ..... | .71 | ..... | .55 | ..... | .32 | .43 | ..... |

*Daily discharge, in second-feet, of Deer Creek near Hot Springs, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.2 | 3.4 | 5.7 | 5.2 | 5.0 | 5.0 | 8.5 | 7.8 | 6.9 | 3.2 | 1.8 | 3.2 |
| 2 | 2.4 | 3.6 | 5.7 | 5.1 | 5.0 | 5.2 | 7.8 | 7.5 | 6.3 | 3.0 | 2.0 | 3.0 |
| 3 | 2.4 | 3.8 | 5.7 | 5.0 | 5.0 | 5.0 | 7.8 | 7.2 | 6.3 | 3.0 | 1.9 | 2.6 |
| 4 | 2.4 | 3.8 | 6.0 | 5.2 | 5.0 | 6.1 | 8.5 | 7.2 | 5.2 | 3.0 | 1.9 | 2.6 |
| 5 | 2.8 | 4.4 | 6.0 | 4.4 | 5.0 | 7.2 | 10 | 7.5 | 5.0 | 1.5 | 1.7 | 2.4 |
| 6 | 2.6 | 4.4 | 5.4 | 3.2 | 5.0 | 6.9 | 8.9 | 7.5 | 5.0 | .7 | 1.8 | 2.4 |
| 7 | 2.6 | 4.4 | 5.4 | 4.4 | 5.0 | 6.6 | 7.8 | 5.4 | 5.0 | 1.1 | 1.6 | 2.2 |
| 8 | 2.6 | 4.4 | 5.4 | 4.8 | 7.5 | 5.7 | 7.8 | 5.4 | 4.8 | 1.3 | 1.7 | 2.2 |
| 9 | 2.4 | 4.0 | 6.9 | 5.0 | 5.7 | 5.2 | 7.8 | 5.2 | 5.0 | 1.5 | 1.7 | 2.0 |
| 10 | 2.6 | 4.8 | 5.7 | 5.2 | 5.4 | 5.4 | 8.9 | 5.0 | 5.0 | 1.7 | 1.6 | 1.8 |
| 11 | 2.6 | 5.4 | 5.7 | 4.8 | 5.0 | 5.7 | 9.3 | 6.3 | 5.0 | 1.6 | 1.7 | 1.8 |
| 12 | 2.6 | 4.8 | 5.7 | 5.2 | 5.0 | 6.0 | 8.9 | 6.3 | 4.8 | 1.6 | 1.3 | 1.9 |
| 13 | 2.6 | 5.0 | 5.7 | 5.2 | 5.0 | 5.7 | 8.9 | 6.3 | 4.6 | 1.5 | .9 | 1.9 |
| 14 | 2.4 | 5.0 | 5.7 | 5.4 | 5.0 | 5.0 | 8.9 | 6.0 | 4.4 | 1.5 | .8 | 1.8 |
| 15 | 2.4 | 4.8 | 7.8 | 5.4 | 5.0 | 5.4 | 7.8 | 5.2 | 4.4 | 1.6 | .8 | 1.8 |
| 16 | 2.6 | 4.8 | 6.3 | 6.6 | 5.0 | 5.7 | 7.8 | 5.0 | 4.0 | 1.6 | .8 | 1.7 |
| 17 | 2.4 | 5.0 | 6.9 | 6.6 | 5.0 | 5.7 | 8.1 | 5.0 | 4.0 | 1.6 | .9 | 1.6 |
| 18 | 2.4 | 5.0 | 6.6 | 5.4 | 5.0 | 7.5 | 7.8 | 5.0 | 4.0 | 1.6 | 1.1 | 1.6 |
| 19 | 2.4 | 5.4 | 6.0 | 6.0 | 5.0 | 8.1 | 7.8 | 5.0 | 3.6 | 1.6 | 1.1 | 1.6 |
| 20 | 2.8 | 6.3 | 6.3 | 5.4 | 5.0 | 7.2 | 8.1 | 5.0 | 3.6 | 1.5 | 1.2 | 1.7 |
| 21 | 3.0 | 6.6 | 5.4 | 5.0 | 5.0 | 6.3 | 8.1 | 5.0 | 3.4 | 2.4 | 1.6 | 1.8 |
| 22 | 3.0 | 6.6 | 5.2 | 4.6 | 4.8 | 7.2 | 8.5 | 5.0 | 3.4 | 2.0 | 1.3 | 2.0 |
| 23 | 3.0 | 5.4 | 5.2 | 4.6 | 5.0 | 7.2 | 9.3 | 5.0 | 3.2 | 2.4 | 1.7 | 2.2 |
| 24 | 3.0 | 5.4 | 5.2 | 4.6 | 14 ½ | 7.5 | 10 ½ | 5.0 | 3.2 | 2.0 | 1.6 | 2.0 |
| 25 | 3.2 | 5.4 | 5.2 | 5.0 | 8.1 | 7.2 | 10 ½ | 4.4 | 3.0 | 2.0 | 1.5 | 2.0 |
| 26 | 3.0 | 5.4 | 5.2 | 5.0 | 6.3 | 5.0 | 11 | 4.6 | 2.6 | 2.2 | 1.5 | 2.0 |
| 27 | 3.0 | 5.4 | 5.2 | 5.0 | 6.3 | 7.2 | 10 | 4.2 | 5.2 | 2.4 | 6.0 | 2.0 |
| 28 | 3.2 | 5.4 | 4.6 | 5.0 | 5.0 | 7.8 | 9.7 | 15 | 4.0 | 2.6 | 5.7 | 2.2 |
| 29 | 3.4 | 5.7 | 5.0 | 5.0 | ..... | 7.8 | 9.3 | 7.8 | 3.4 | 2.4 | 4.4 | 2.4 |
| 30 | 3.2 | 5.7 | 5.4 | 5.0 | ..... | 8.5 | 8.1 | 7.8 | 3.0 | 2.0 | 3.2 | 2.6 |
| 31 | 3.2 | ..... | 5.0 | 5.0 | ..... | 12 ½ | ..... | 6.3 | ..... | 1.7 | 3.6 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve; interpolated for days for which gage heights are not recorded.

*Monthly discharge of Deer Creek at Hot Springs, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 3.4 | 2.2 | 2.72 | 167 | D. |
| November | 6.6 | 3.4 | 4.98 | 296 | C. |
| December | 7.8 | 4.6 | 5.72 | 352 | C. |
| January | 6.6 | 3.2 | 5.07 | 312 | C. |
| February | 14 | 4.8 | 5.65 | 314 | C. |
| March | 12 | 5.0 | 6.58 | 405 | C. |
| April | 11 | 7.8 | 8.71 | 518 | C. |
| May | 15 | 4.2 | 6.16 | 379 | C. |
| June | 6.9 | 2.6 | 4.38 | 261 | C. |
| July | 3.2 | .7 | 1.93 | 119 | D. |
| August | 6.0 | .8 | 1.95 | 120 | D. |
| September | 3.2 | 1.6 | 2.10 | 125 | D. |
| The year | 15 | .7 | 4.65 | 3,370 | |

## TYLER CREEK NEAR HOT SPRINGS, CAL.

LOCATION.—Below foot-log at the Thompson ranch, in Sequoia National Forest, about 1½ miles north of Hot Springs, and 4 miles above junction with Deer Creek.

RECORDS AVAILABLE.—January 16, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on left bank 100 feet below observer's house. April 7, 1913, new vertical staff installed at same location; datum 0.20 foot lower. All published gage heights refer to original datum.

CHANNEL.—Bowlders and sand; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made by wading.

DIVERSIONS.—Three small irrigation ditches divert water above the station.

ACCURACY.—Results fair.

COOPERATION.—Gage-height record furnished through United States Forest Service by J. F. Moody.

The following discharge measurement was made by H. J. Tompkins:

Apr. 7, 1913: Gage height: old gage, 1.06 feet; new gage, 1.26 feet; discharge, 6.1 second-feet.

*Daily gage height, in feet, and discharge, in second-feet, of Tyler Creek near Hot Springs, Cal., for the year ending Sept. 30, 1913.*

[J. F. Moody, observer.]

| Day. | Apr. | | May. | | June. | | July. | | Aug. | | Sept. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 0.90 | 3.2 | 0.80 | 2.0 | 0.60 | 0.6 | 0.58 | 0.5 | 0.40 | 0.1 |
| 2 | ..... | ..... | .90 | 3.2 | .79 | 1.9 | .60 | .6 | .60 | .6 | .40 | .1 |
| 3 | ..... | ..... | 1.55 | 22 | .78 | 1.8 | .60 | .6 | .60 | .6 | .30 | .05 |
| 4 | ..... | ..... | .95 | 4.0 | .77 | 1.7 | .60 | .6 | .59 | .6 | .40 | .1 |
| 5 | ..... | ..... | .80 | 2.0 | .76 | 1.6 | .60 | .6 | .58 | .5 | .40 | .1 |
| 6 | ..... | ..... | .75 | 1.6 | .76 | 1.6 | .60 | .6 | .56 | .5 | .46 | .2 |
| 7 | 1.06 | 6.2 | .73 | 1.4 | .75 | 1.6 | .58 | .5 | .54 | .4 | .40 | .1 |
| 8 | ..... | 5.7 | .73 | 1.4 | .72 | 1.3 | .58 | .5 | .52 | .4 | .36 | .1 |
| 9 | ..... | 5.3 | .72 | 1.3 | .75 | 1.6 | .57 | .5 | .50 | .3 | ..... | .0 |
| 10 | 1.00 | 4.9 | .70 | 1.1 | .79 | 1.9 | .55 | .4 | .50 | .3 | ..... | .0 |
| 11 | 1.00 | 4.9 | .75 | 1.6 | .75 | 1.6 | .53 | .4 | .50 | .3 | ..... | .0 |
| 12 | 1.00 | 4.9 | .70 | 1.1 | .72 | 1.3 | .51 | .3 | ..... | .3 | ..... | .0 |
| 13 | 1.00 | 4.9 | .70 | 1.1 | .73 | 1.4 | .50 | .3 | ..... | .3 | ..... | .0 |
| 14 | 1.05 | 6.0 | .70 | 1.1 | .76 | 1.6 | .55 | .4 | ..... | .3 | ..... | .0 |
| 15 | 1.05 | 6.0 | .70 | 1.1 | .78 | 1.8 | .33 | .05 | .50 | .3 | ..... | .0 |
| 16 | 1.05 | 6.0 | .70 | 1.1 | .80 | 2.0 | .30 | .05 | .50 | .3 | .36 | .1 |
| 17 | 1.00 | 4.9 | .70 | 1.1 | .75 | 1.6 | .30 | .05 | .50 | .3 | .36 | .1 |
| 18 | 1.08 | 6.6 | .70 | 1.1 | .73 | 1.4 | .30 | .05 | .50 | .3 | .40 | .1 |
| 19 | 1.05 | 6.0 | .70 | 1.1 | .72 | 1.3 | .30 | .05 | .50 | .3 | .40 | .1 |
| 20 | 1.00 | 4.9 | .71 | 1.2 | .70 | 1.1 | .30 | .05 | .50 | .3 | .40 | .1 |
| 21 | 1.00 | 4.9 | .71 | 1.2 | .70 | 1.1 | .55 | .4 | .40 | .1 | .40 | .1 |
| 22 | 1.00 | 4.9 | .71 | 1.2 | .70 | 1.1 | .55 | .4 | .40 | .1 | .40 | .1 |
| 23 | 1.00 | 4.9 | .72 | 1.3 | .60 | .6 | .33 | .05 | ..... | .0 | .40 | .1 |
| 24 | 1.00 | 4.9 | .73 | 1.4 | .70 | 1.1 | .55 | .4 | ..... | .0 | .40 | .1 |
| 25 | 1.00 | 4.9 | .73 | 1.4 | .70 | 1.1 | .55 | .4 | ..... | .0 | .40 | .1 |
| 26 | 1.00 | 4.9 | .73 | 1.4 | .70 | 1.1 | .55 | .4 | ..... | .0 | .40 | .1 |
| 27 | 1.00 | 4.9 | .74 | 1.5 | .95 | 4.0 | .56 | .5 | ..... | .5 | .36 | .1 |
| 28 | 1.00 | 4.9 | 1.10 | 7.0 | .78 | 1.8 | .55 | .4 | .60 | .6 | .40 | .1 |
| 29 | .95 | 4.0 | 1.00 | 4.9 | .70 | 1.1 | .56 | .5 | .55 | .4 | .40 | .1 |
| 30 | .90 | 3.2 | .78 | 1.8 | .70 | 1.1 | .57 | .5 | .50 | .3 | .40 | .1 |
| 31 | ..... | ..... | .79 | 1.9 | ..... | ..... | .57 | .5 | .40 | .1 | ..... | ..... |

NOTE.—Observer noted July 15, creek low, due to irrigation above; creek dries up short distance below gage. Aug. 23, all water taken from creek for irrigation. Aug. 27, rained late in afternoon and raised creek to 0.8 foot. Sept. 9–15, all water out of creek.

Discharge determined from a fairly well defined rating curve. Discharge Apr. 8 and 9 interpolated; Aug. 12 to 14 and 27, estimated from observer's notes.

*Monthly discharge of Tyler Creek near Hot Springs, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| April 1–24 | 6.2 | 3.2 | 5.15 | 245 | B. |
| May | 22 | 1.1 | 2.51 | 154 | C. |
| June | 4.0 | .6 | 1.54 | 92 | C. |
| July | .6 | .05 | .38 | 23 | ..... |
| August | .6 | .0 | .32 | 20 | ..... |
| September | .1 | .0 | .08 | 5 | ..... |
| The period | ..... | ..... | ..... | 539 | ..... |

## TULE RIVER NEAR PORTERSVILLE, CAL.

LOCATION.—In the NW. ¼ NW. ¼ sec. 25, T. 21 S., R. 28 E., below highway bridge near the McFarland ranch, about 1 mile above mouth of South Fork, and 6 miles east of Portersville. The North and Middle forks of Tule River unite about 9 miles above the station.

RECORDS AVAILABLE.—May 1, 1901, to September 30, 1913.

DRAINAE AREA.—266 square miles.

GAGE.—Prior to December 6, 1912, staff in two sections on right bank, 100 feet below bridge; vertical upper section nailed to willow tree; inclined low-water section fastened to posts. Gage was checked and repaired December 6, 1912, and now consists of one inclined and three vertical sections.

CHANNEL.—Gravel and small bowlders; practically permanent.

DISCHARGE MEASUREMENTS.—Made from bridge above gage or by wading.

DIVERSION.—Several small irrigation ditches divert water above the station.

ACCURACY.—Sometime between September 15 and December 6, 1912, a tree was felled across river for foot-log. This caused backwater at gage as shown by measurement on December 6. The tree was probably removed by the rise in February 25, 1913. Results for remainder of year are good.

*Discharge measurements of Tule River near Portersville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 6 | J. E. Stewart | 1.35 | 20 | June 8 | E. C. Murphy | 1.55 | 72 |
| Apr. 3 | H. J. Tompkins | 2.14 | 158 | | | | |

*Daily gage height, in feet, of Tule River near Portersville, Cal., for the year ending Sept. 30, 1913.*

[Mrs. Martha Brough, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.50 | 0.88 | 1.33 | 1.45 | 1.24 | 1.50 | 2.55 | 1.90 | 1.81 | 0.96 | 0.59 | 1.18 |
| 2 | .50 | .90 | 1.34 | 1.46 | 1.24 | 1.48 | 2.5 | 1.80 | 1.78 | .94 | .55 | .85 |
| 3 | .55 | .92 | 1.35 | 1.48 | 1.24 | 1.45 | 2.2 | 1.70 | 1.75 | .91 | .52 | .80 |
| 4 | .60 | .95 | 1.36 | 1.49 | 1 24 | 1.45 | 1.94 | 1.70 | 1.70 | .89 | .54 | .70 |
| 5 | .62 | .98 | 1.38 | 1.48 | 1.24 | 1.50 | 1.92 | 1.74 | 1.65 | .88 | .55 | .62 |
| 6 | .63 | .98 | 1.34 | 1.46 | 1.24 | 1.60 | 1.90 | 1.76 | 1.60 | .85 | .53 | .60 |
| 7 | .64 | .99 | 1.30 | 1.44 | 1.24 | 1.80 | 1.85 | 1.78 | 1.59 | .80 | .41 | .58 |
| 8 | .65 | 1.00 | 1.32 | 1.45 | 1.25 | 1.80 | 1.80 | 1.80 | 1.55 | .75 | .39 | .55 |
| 9 | .67 | 1.00 | 1.34 | 1.52 | 1.25 | 1.80 | 1.77 | 1.85 | 1.51 | .70 | .40 | .52 |
| 10 | .68 | 1.20 | 1.35 | 1.58 | 1.25 | 1.75 | 1.80 | 1.85 | 1.45 | .64 | .38 | .48 |
| 11 | .70 | 1.25 | 1.36 | 1.60 | 1.25 | 1.68 | 1.85 | 1.85 | 1.41 | .59 | .32 | .45 |
| 12 | .70 | 1.20 | 1.36 | 1.56 | 1.25 | 1.62 | 1.88 | 1.80 | 1.38 | .60 | .29 | .45 |
| 13 | .70 | 1.15 | 1.35 | 1.54 | 1.25 | 1.56 | 1.90 | 1.76 | 1.34 | .54 | .29 | .48 |
| 14 | .70 | 1.12 | 1.35 | 1.52 | 1.25 | 1.51 | 2.0 | 1.72 | 1.30 | .50 | .31 | .50 |
| 15 | .70 | 1.10 | 1.40 | 1.68 | 1.25 | 1.49 | 2.0 | 1.70 | 1.25 | .45 | .32 | .48 |
| 16 | .70 | 1.09 | 1.50 | 1.75 | 1.25 | 1.50 | 1.95 | 1.73 | 1.21 | .41 | .33 | .47 |
| 17 | .70 | 1.09 | 1.45 | 1.98 | 1.24 | 1.52 | 1.94 | 1.79 | 1.15 | .38 | .30 | .45 |
| 18 | .70 | 1.09 | 1.44 | 1.38 | 1.23 | 1.56 | 1.92 | 1.75 | 1.10 | .34 | .29 | .42 |
| 19 | .70 | 1.10 | 1.44 | 1.32 | 1.21 | 1.60 | 1.91 | 1.73 | 1.03 | .31 | .28 | .40 |
| 20 | .70 | 1.30 | 1.44 | 1.31 | 1.20 | 1.58 | 1.91 | 1.72 | 1.00 | .30 | .25 | .36 |
| 21 | .70 | 1.35 | 1.44 | 1.30 | 1.20 | 1.54 | 1.91 | 1.74 | 1.00 | .34 | .22 | .34 |
| 22 | .72 | 1.32 | 1.37 | 1.28 | 1.22 | 1.52 | 1.90 | 1.75 | .98 | .38 | .20 | .32 |
| 23 | .74 | 1.30 | 1.37 | 1.25 | 1.25 | 1.55 | 1.94 | 1.76 | .96 | .50 | .29 | .31 |
| 24 | .76 | 1.30 | 1.38 | 1.20 | 1.65 | 1.60 | 1.95 | 1.77 | .95 | .50 | .29 | .30 |
| 25 | .78 | 1.30 | 1.38 | 1.20 | 2.2 | 1.55 | 2.2 | 1.68 | .94 | .50 | .29 | .29 |
| 26 | .79 | 1.30 | 1.40 | 1.20 | 1.65 | 1.58 | 2.25 | 1.70 | .92 | .55 | .31 | .28 |
| 27 | .80 | 1.32 | 1.44 | 1.20 | 1.72 | 1.62 | 2.2 | 1.75 | 1.05 | .60 | .32 | .28 |
| 28 | .82 | 1.33 | 1.44 | 1.20 | 1.55 | 1.70 | 2.15 | 2.2 | 1.10 | .62 | .35 | .26 |
| 29 | .94 | 1.33 | 1.42 | 1.21 | ..... | 1.72 | 2.1 | 1.89 | 1.00 | .60 | .45 | .27 |
| 30 | .86 | 1.32 | 1.42 | 1.22 | ..... | 2.1 | 2.0 | 1.85 | .98 | .65 | .50 | .28 |
| 31 | .87 | ..... | 1.42 | 1.23 | ..... | 2.4 | ..... | 1.84 | ..... | .60 | .70 | ..... |

*Daily discharge, in second-feet, of Tule River near Portersville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 9.5 | 20 | 26 | 17 | 66 | 248 | 116 | 103 | 23 | 5 | 38 |
| 2 | 4 | 10 | 20 | 27 | 17 | 64 | 235 | 102 | 100 | 21 | 4 | 16 |
| 3 | 4 | 10 | 20 | 29 | 17 | 61 | 165 | 90 | 96 | 20 | 3.5 | 13 |
| 4 | 5.5 | 11 | 21 | 29 | 17 | 61 | 122 | 90 | 90 | 18 | 4 | 8 |
| 5 | 6 | 12 | 22 | 29 | 17 | 66 | 119 | 95 | 84 | 18 | 4 | 5.5 |
| 6 | 6 | 12 | 20 | 27 | 17 | 78 | 116 | 97 | 78 | 16 | 3.5 | 5 |
| 7 | 6 | 12 | 18 | 26 | 17 | 102 | 109 | 100 | 77 | 13 | 2 | 4.5 |
| 8 | 6 | 12 | 19 | 26 | 17 | 102 | 102 | 102 | 72 | 10 | 2 | 4 |
| 9 | 6.5 | 12 | 20 | 32 | 17 | 102 | 98 | 109 | 67 | 8 | 2 | 3.5 |
| 10 | 6.5 | 16 | 20 | 38 | 17 | 96 | 102 | 109 | 61 | 6 | 2 | 3 |
| 11 | 7 | 17 | 21 | 40 | 17 | 88 | 109 | 109 | 57 | 5 | 1.5 | 2.5 |
| 12 | 7 | 16 | 21 | 36 | 17 | 80 | 113 | 102 | 54 | 5 | 1.5 | 2.5 |
| 13 | 7 | 15 | 20 | 34 | 17 | 73 | 116 | 97 | 51 | 4 | 1.5 | 3 |
| 14 | 7 | 14 | 20 | 32 | 17 | 67 | 130 | 92 | 47 | 3 | 1.5 | 3 |
| 15 | 7 | 14 | 23 | 50 | 17 | 65 | 130 | 90 | 43 | 2.5 | 1.5 | 3 |
| 16 | 7 | 14 | 30 | 58 | 17 | 66 | 123 | 94 | 40 | 2 | 1.5 | 2.5 |
| 17 | 7 | 14 | 26 | 96 | 17 | 68 | 122 | 101 | 36 | 2 | 1.5 | 2.5 |
| 18 | 7 | 14 | 26 | 22 | 17 | 73 | 119 | 96 | 32 | 1.5 | 1.5 | 2 |
| 19 | 7 | 14 | 26 | 19 | 16 | 78 | 117 | 94 | 27 | 1.5 | 1.5 | 2 |
| 20 | 7 | 18 | 26 | 18 | 16 | 76 | 117 | 92 | 25 | 1.5 | 1 | 2 |
| 21 | 7 | 20 | 26 | 18 | 16 | 71 | 117 | 95 | 25 | 1.5 | 1 | 1.5 |
| 22 | 7.5 | 19 | 22 | 18 | 16 | 68 | 116 | 96 | 24 | 2 | 1 | 1.5 |
| 23 | 7.5 | 18 | 22 | 17 | 17 | 72 | 122 | 97 | 23 | 3 | 1.5 | 1.5 |
| 24 | 8 | 18 | 22 | 16 | 46 | 78 | 123 | 98 | 22 | 3 | 1.5 | 1.5 |
| 25 | 8 | 18 | 22 | 16 | 145 | 72 | 165 | 88 | 21 | 3 | 1.5 | 1.5 |
| 26 | 8.5 | 18 | 23 | 16 | 84 | 76 | 175 | 90 | 20 | 4 | 1.5 | 1.5 |
| 27 | 8.5 | 19 | 26 | 16 | 92 | 80 | 165 | 96 | 28 | 5 | 1.5 | 1.5 |
| 28 | 9 | 20 | 26 | 16 | 72 | 90 | 156 | 165 | 32 | 5.5 | 2 | 1.5 |
| 29 | 9 | 20 | 24 | 16 | ..... | 92 | 146 | 115 | 25 | 5 | 2.5 | 1.5 |
| 30 | 9.5 | 19 | 24 | 16 | ..... | 146 | 130 | 109 | 24 | 6.5 | 3 | 1.5 |
| 31 | 9.5 | ..... | 24 | 17 | ..... | 210 | ..... | 108 | ..... | 5 | 8 | ..... |

NOTE.—Discharge determined from two rating curves as follows: Poorly defined, Oct. 1 to Feb. 25; well defined, Feb. 26 to Sept. 30. See remarks under "Accuracy" in station description.

*Monthly discharge of Tule River near Portersville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 9.5 | 4 | 6.98 | 429 | C. |
| November | 20 | 9.5 | 15.2 | 904 | C. |
| December | 30 | 18 | 22.6 | 1,390 | B. |
| January | 96 | 16 | 28.3 | 1,740 | C. |
| February | 145 | 16 | 29.5 | 1,610 | C. |
| March | 210 | 61 | 83.5 | 5,130 | A. |
| April | 248 | 98 | 134 | 7,970 | A. |
| May | 165 | 88 | 101 | 6,210 | A. |
| June | 103 | 20 | 49.5 | 2,950 | B. |
| July | 23 | 1.5 | 7.24 | 445 | C. |
| August | 8 | 1 | 2.31 | 142 | C. |
| September | 38 | 1.5 | 4.68 | 278 | C. |
| The year | 248 | 1 | 40.4 | 29,200 | |

NORTH FORK OF MIDDLE FORK OF TULE RIVER [1] NEAR SPRINGVILLE, CAL.

LOCATION.—In the NE. ¼ NW. ¼ sec. 18, T. 20 S., R. 31 E., about one-eighto mile below mouth of Hossack Creek, 3¼ miles above juncrion with South Fork of Middle Fork, and about 9½ miles northeast of Springville.

RECORDS AVAILABLE.—January 1, 1909, to December 31, 1912, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stoge recorder at weir.

DISCHARGE.—Computed from gage-height record showin3 head on weir.

COOPERATION.—Record of daily discharge furnished by San Joaquin Light & Power Corporation, .hrough G. O. Newman, chief engineer.

*Daily discharge, in second-feet, of North Fork of Middle Fork of Tule River near Springville, Cal., for the period Oct. 1 to Dec. 31, 1912.*

| Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.4 | 9.1 | 8.3 | 11 | 9.0 | 11.2 | 8.3 | 21 | 9.0 | 8.6 | 8.5 |
| 2 | 7.6 | 9.3 | 8.3 | 12 | 9.0 | 10.1 | 8.6 | 22 | 9.0 | 8.6 | 8.5 |
| 3 | 7.6 | 9.5 | 8.9 | 13 | 8.5 | 10.1 | 8.3 | 23 | 9.0 | 8.6 | 8.6 |
| 4 | 7.8 | 9.6 | 8.9 | 14 | 8.5 | 9.8 | 8.3 | 24 | 9.1 | 8.6 | 8.5 |
| 5 | 7.9 | 9.8 | 8.1 | 15 | 8.5 | 9.6 | 8.6 | 25 | 9.1 | 8.8 | 8.5 |
| 6 | 8.4 | 9.6 | 8.1 | 16 | 8.7 | 9.5 | 8.7 | 26 | 9.1 | 8.8 | 8.3 |
| 7 | 9.3 | 9.5 | 9.5 | 17 | 8.7 | 8.9 | 8.7 | 27 | 9.2 | 8.7 | 8.6 |
| 8 | 9.3 | 9.1 | 8.8 | 18 | 8.7 | 8.8 | 8.7 | 28 | 9.6 | 8.3 | 8.6 |
| 9 | 9.1 | 9.5 | 8.7 | 19 | 9.0 | 8.7 | 8.5 | 29 | 9.3 | 8.6 | 8.8 |
| 10 | 9.1 | 11.2 | 8.6 | 20 | 9.0 | 8.8 | 8.5 | 30 | 9.5 | 8.6 | 8.8 |
| | | | | | | | | 31 | 9.3 | ..... | 8.8 |

*Monthly discharge of North Fork of Middle Fork of Tule River near Springville, Cal., for the period Oct. 1 to Dec. 31, 1912.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 9.6 | 7.4 | 8.78 | 540 |
| November | 11.2 | 8.3 | 9.26 | 551 |
| December | 9.5 | 8.1 | 8.58 | 528 |
| The period | ..... | ..... | ..... | 1,620 |

NOTE.—Monthly discharge computed by engineers of the U. S. Geological Survey.

SOUTH FORK OF MIDDLE FORK OF TULE RIVER [2] NEAR SPRINGVILLE, CAL.

LOCATION.—One thousand feet above junction with North Fork of Middle Fork and about 7 miles northeast of Springville.

RECORDS AVAILABLE.—January 1, 1909, to December 31, 1912, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder at weir.

DISCHARGE.—Computed from gage-height record showing head on weir.

COOPERATION.—Record of daily discharge furnished by San Joaquin Light & Power Corporation, through G. O. Newman, chief engineer.

[1] Known locally as Doyle Branch of Tule River.
[2] Known locally as Nelson Branch of Tule River.

*Daily discharge, in second feet, of South Fork of Middle Fork of Tule River near Springville, Cal., for the period Oct. 1 to Dec. 31, 1912.*

| Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.0 | 5.8 | 6.8 | 11 | 5.2 | 7.8 | 7.1 | 21 | 5.1 | 6.8 | 5.9 |
| 2 | 4.2 | 5.8 | 6.8 | 12 | 4.8 | 7.8 | 7.1 | 22 | 4.4 | 6.8 | 6.2 |
| 3 | 3.8 | 6.1 | 6.9 | 13 | 4.8 | 7.5 | 7.1 | 23 | 4.6 | 6.6 | 6.8 |
| 4 | 4.2 | 6.4 | 7.0 | 14 | 4.1 | 7.3 | 6.6 | 24 | 5.3 | 6.6 | 7.2 |
| 5 | 5.0 | 6.8 | 6.6 | 15 | 4.4 | 6.9 | 6.1 | 25 | 5.0 | 6.4 | 6.8 |
| 6 | 5.3 | 6.8 | 6.6 | 16 | 4.6 | 6.9 | 5.4 | 26 | 5.0 | 6.4 | 6.8 |
| 7 | 5.3 | 6.6 | 6.9 | 17 | 4.6 | 6.4 | 5.9 | 27 | 5.2 | 6.4 | 7.2 |
| 8 | 5.0 | 6.3 | 7.0 | 18 | 4.6 | 6.2 | 5.4 | 28 | 5.8 | 6.3 | 7.3 |
| 9 | 5.0 | 6.2 | 7.0 | 19 | 4.6 | 6.2 | 6.4 | 29 | 6.3 | 6.4 | 7.2 |
| 10 | 5.2 | 8.2 | 7.0 | 20 | 5.0 | 7.0 | 6.1 | 30 | 6.2 | 6.8 | 7.2 |
| | | | | | | | | 31 | 6.2 | ..... | 7.2 |

*Monthly discharge of South Fork of Middle Fork of Tule River near Springville, Cal., for the period Oct. 1 to Dec. 31, 1912.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 6.3 | 3.8 | 4.93 | 303 |
| November | 8.2 | 5.8 | 6.68 | 397 |
| December | 7.3 | 5.4 | 6.70 | 412 |
| The period | ..... | ..... | ..... | 1,110 |

NOTE.—Monthly discharge computed by engineers of the U. S. Geological Survey.

## BEAR CREEK NEAR SPRINGVILLE, CAL.

LOCATION.—At Bear Creek ranger station, about 150 feet above mouth of Rancheria Creek, 2¾ miles above junction with North Fork of Tule River, and 6 miles northeast of Springville.

RECORDS AVAILABLE.—January 23, 1911, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a sycamore tree on right bank about 600 feet southwest of ranger station.

CHANNEL.—Sand, gravel, and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made by wading.

DIVERSIONS.—A small irrigation ditch heads about 300 feet above the station.

ACCURACY.—Rating curve well defined except for high stages. Results good at low and medium stages, but monthly means are liable to considerable error, owing to few gage readings.

COOPERATION.—Station maintained in cooperation with United States Forest Service The following discharge measurement was made by H. J. Tompkins:

Apr. 4, 1913: Gage height, 1.00 feet; discharge, 6.0 second-feet.

*Daily gage height, in feet, of Bear Creek near Springville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.63 | | | | | | | | 0.51 | | 1.72 |
| 2 | 0.49 | | 0.65 | | | 0.91 | | 0.85 | | | | |
| 3 | | | | | 0.81 | | | | 0.61 | | | |
| 4 | | .61 | | 0.68 | | | 1.00 | | | | | |
| 5 | .51 | | | | | | | | | | | |
| 6 | | | | .58 | | | | .83 | | | | |
| 7 | | | .67 | | | 1.00 | | | | | 0.44 | |
| 8 | | | | | .83 | | | | | | | |
| 9 | | | | .71 | | | .91 | | | | | |
| 10 | .51 | .81 | | | | | .95 | | .61 | | | |
| 11 | | | | | | 1.01 | | | | | | .35 |
| 12 | | | | | | | 1.10 | | | | | |
| 13 | | .61 | | | | | | | | | | |
| 14 | | | | | | | | .81 | .58 | | | |
| 15 | | | .81 | 1.01 | | | | | | | | |
| 16 | | | | | .81 | | | | | | | |
| 17 | | | | | | | 1.01 | | | | | .30 |
| 18 | | | .71 | | | | | .61 | | .35 | .45 | |
| 19 | .51 | .59 | | .75 | | | | | .52 | | | |
| 20 | | | | | | 1.00 | | | | | | |
| 21 | | .59 | | | | | 1.00 | | .71 | .55 | | |
| 22 | | | .68 | | | | | .61 | | | | .39 |
| 23 | | | | | | | | | | | | |
| 24 | | | | | 2.00 | | | | | | .81 | |
| 25 | | | | .79 | 1.12 | | | | | | 1.02 | |
| 26 | | .60 | | | | .99 | | | | .45 | | |
| 27 | Rain. | | | | | | | | | | | |
| 28 | .58 | | .68 | | .91 | | | .99 | .52 | | | |
| 29 | .61 | | | | | 1.00 | | | | | | .40 |
| 30 | | .63 | | .81 | | | .98 | | .50 | | | |
| 31 | .60 | | .68 | | | | | | | | .99 | |

*Daily discharge, in second-feet, of Bear Creek near Springville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 1.5 | 1.7 | 1.9 | 3.2 | 4.4 | 5.5 | 4.5 | 2.4 | 0.8 | 0.5 | 20 |
| 2 | .7 | 1.5 | 1.7 | 1.9 | 3.2 | 4.4 | 4.4 | 3.7 | 1.8 | .8 | .5 | 10 |
| 3 | .7 | 1.5 | 1.7 | 1.9 | 3.2 | 4.6 | 4.4 | 3.4 | 1.4 | .8 | .5 | 5.0 |
| 4 | .7 | 1.4 | 1.8 | 1.9 | 3.2 | 4.8 | 5.5 | 3.4 | 1.4 | .7 | .5 | 2.5 |
| 5 | .8 | 1.7 | 1.6 | 1.6 | 3.2 | 5.0 | 6.2 | 3.6 | 1.4 | .2 | .5 | 1.2 |
| 6 | .8 | 1.6 | 1.6 | 1.2 | 3.2 | 5.2 | 4.9 | 3.5 | 1.4 | .1 | .5 | .6 |
| 7 | .8 | 1.6 | 1.9 | 1.5 | 3.2 | 5.5 | 4.4 | 3.0 | 1.4 | .1 | .5 | .5 |
| 8 | .8 | 1.6 | 1.8 | 1.8 | 3.5 | 5.5 | 4.4 | 3.0 | 1.3 | .2 | .5 | .5 |
| 9 | .7 | 1.5 | 1.8 | 2.2 | 3.4 | 5.4 | 4.4 | 2.7 | 1.4 | .2 | .5 | .4 |
| 10 | .8 | 3.2 | 1.8 | 2.3 | 3.3 | 5.5 | 4.9 | 2.6 | 1.4 | .2 | .4 | .3 |
| 11 | .8 | 3.0 | 1.7 | 1.8 | 3.2 | 5.6 | 7.0 | 3.3 | 1.4 | .2 | .3 | .2 |
| 12 | .8 | 2.2 | 1.8 | 2.3 | 3.2 | 5.6 | 6.8 | 3.3 | 1.3 | .2 | .2 | .2 |
| 13 | .8 | 1.4 | 1.7 | 2.3 | 3.2 | 5.6 | 6.8 | 3.3 | 1.3 | .2 | .1 | .2 |
| 14 | .7 | 1.4 | 1.7 | 4.0 | 3.2 | 4.5 | 6.8 | 3.2 | 1.2 | .2 | .1 | .2 |
| 15 | .7 | 1.3 | 3.2 | 5.6 | 3.2 | 5.0 | 4.4 | 2.3 | 1.2 | .2 | .1 | .2 |
| 16 | .8 | 1.3 | 2.8 | 6.8 | 3.2 | 5.6 | 4.4 | 1.4 | 1.1 | .2 | .1 | .2 |
| 17 | .8 | 1.2 | 2.5 | 5.4 | 3.2 | 5.6 | 5.6 | 1.4 | 1.1 | .2 | .2 | .1 |
| 18 | .8 | 1.2 | 2.2 | 4.0 | 3.2 | 6.0 | 4.4 | 1.4 | 1.1 | .2 | .5 | .1 |
| 19 | .8 | 1.2 | 2.1 | 2.6 | 3.2 | 6.3 | 4.4 | 1.4 | .8 | .2 | .5 | .1 |
| 20 | .8 | 1.2 | 2.0 | 2.6 | 3.2 | 5.5 | 5.6 | 1.4 | .8 | .2 | .5 | .2 |
| 21 | .9 | 1.2 | 1.9 | 2.6 | 3.2 | 5.1 | 5.5 | 1.4 | 2.2 | 1.0 | .5 | .2 |
| 22 | .9 | 1.2 | 1.9 | 2.7 | 3.0 | 5.5 | 5.5 | 1.4 | .8 | .9 | .5 | .3 |
| 23 | .9 | 1.2 | 1.9 | 2.8 | 3.2 | 5.5 | 6.1 | 1.4 | .7 | .8 | .5 | .3 |
| 24 | .9 | 1.2 | 1.9 | 2.9 | 30 | 5.6 | 7.0 | 1.4 | .7 | .7 | 3.2 | .3 |
| 25 | 1.0 | 1.3 | 1.9 | 3.0 | 7.1 | 5.5 | 7.0 | 1.1 | .7 | .6 | 5.8 | .3 |
| 26 | .9 | 1.3 | 1.9 | 3.0 | 6.2 | 5.4 | 7.5 | 1.2 | .7 | .5 | 5.7 | .3 |
| 27 | 1.0 | 1.3 | 1.9 | 3.1 | 5.3 | 5.5 | 7.0 | 1.1 | 1.4 | .6 | 5.7 | .3 |
| 28 | 1.2 | 1.2 | 1.9 | 3.1 | 4.4 | 5.5 | 6.7 | 5.4 | .8 | .7 | 5.6 | .3 |
| 29 | 1.4 | 1.3 | 1.9 | 3.2 | | 5.5 | 6.1 | 4.0 | .7 | .6 | 5.5 | .3 |
| 30 | 1.4 | 1.5 | 1.9 | 3.2 | | 5.8 | 5.3 | 2.7 | .7 | .5 | 5.5 | .3 |
| 31 | 1.3 | | 1.9 | 3.2 | | 7.5 | | 2.0 | | .5 | 5.4 | |

NOTE.—For days for which gage heights are not recorded discharge estimated by comparison with that of North and South Forks of Middle Fork of Tule River near Springville and with that of Deer Creek near Hot Springs.

*Monthly discharge of Bear Creek near Springville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 1.4 | 0.6 | 0.87 | 53 | D. |
| November | 3.2 | 1.2 | 1.51 | 90 | C. |
| December | 3.2 | 1.6 | 1.94 | 119 | C. |
| January | 6.8 | 1.2 | 2.85 | 175 | C. |
| February | 30 | 3.0 | 4.54 | 252 | C. |
| March | 7.5 | 4.4 | 5.42 | 333 | D. |
| April | 7.5 | 4.4 | 5.63 | 335 | D. |
| May | 5.4 | 1.1 | 2.55 | 157 | D. |
| June | 2.4 | .7 | 1.20 | 71 | D. |
| July | 1.0 | .1 | .44 | 27 | D. |
| August | 5.8 | .1 | 1.66 | 102 | D. |
| September | 20 | .1 | 1.52 | 90 | D. |
| The year | 30 | .1 | 2.49 | 1,800 | |

NOTE.—See footnote to table of daily discharge.

## SOUTH FORK OF TULE RIVER NEAR PORTERSVILLE,[1] CAL.

LOCATION.—Opposite Indian school on Tule Indian Reservation, about 8 miles above junction with Tule River, 7 miles southeast of Success, and 14 miles southeast of Portersville. Rocky Creek enters about 2 miles above station.

RECORDS AVAILABLE.—October 10, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on left bank 100 feet above pump house.

CHANNEL.—Bowlders and gravel; rough; appears permanent.

DISCHARGE MEASUREMENTS.—Made from cable half a mile below gage or by wading.

DIVERSIONS.—Several small irrigation ditches, having a total capacity of about 11 second-feet, divert water above the station.

ACCURACY.—An average rating curve, defined by measurements made 1910 to 1913, has been used. Results fair.

COOPERATION.—Gage-height record furnished by United States Indian Service.

*Discharge measurements of South Fork of Tule River near Portersville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Apr. 5 | H. J. Tompkins | 1.00 | 35 |
| June 7 | E. C. Murphy | .61 | 12 |

[1] Formerly known as "near Success."

*Daily gage height, in feet, of South Fork of Tule River near Portersville, Cal., for the year ending Sept. 30, 1913.*

[A. P. Edmonson, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.35 | 0.50 | 0.45 | 0.70 | 0.90 | 1.20 | 0.90 | 0.78 | 0.50 | 0.20 | 0.70 |
| 2 | .20 | .35 | .50 | .45 | .70 | .85 | 1.00 | .80 | .72 | .45 | .20 | .45 |
| 3 | .20 | .40 | .50 | .45 | .70 | .85 | .90 | .80 | .72 | .40 | .10 | .32 |
| 4 | .20 | .50 | .50 | .45 | .70 | .80 | 1.00 | .80 | .72 | .40 | .00 | .25 |
| 5 | .30 | .50 | .50 | .45 | .70 | .80 | 1.00 | .80 | .72 | .40 | .00 | .20 |
| 6 | .35 | .45 | .50 | .45 | .70 | .85 | 1.05 | .80 | .72 | .35 | .00 | .20 |
| 7 | .40 | .45 | .50 | .45 | .70 | 1.00 | .90 | .80 | .72 | .35 | .00 | .20 |
| 8 | .40 | .45 | .50 | .45 | .90 | 1.00 | .90 | .80 | .68 | .32 | .00 | .15 |
| 9 | .35 | .45 | .50 | .50 | .80 | .90 | .95 | .70 | .68 | .30 | .00 | .15 |
| 10 | .30 | .60 | .50 | .60 | .70 | .90 | 1.00 | .70 | .62 | .30 | .00 | .10 |
| 11 | .30 | .60 | .50 | .85 | .70 | .85 | 1.00 | .70 | .58 | .30 | .00 | .00 |
| 12 | .30 | .60 | .50 | .90 | .65 | .80 | .95 | .70 | .58 | .30 | 00 | .00 |
| 13 | .30 | .60 | .50 | .80 | .65 | .80 | .95 | .70 | .52 | .30 | .00 | .00 |
| 14 | .30 | .55 | .45 | .80 | .60 | .80 | 1.00 | .62 | .52 | .25 | .00 | .00 |
| 15 | .30 | .55 | .60 | .70 | .60 | .75 | .90 | .62 | .50 | .25 | .00 | .00 |
| 16 | .30 | .55 | .55 | .90 | .55 | .75 | .95 | .60 | .48 | .25 | .00 | .00 |
| 17 | .30 | .50 | .50 | .95 | .55 | .70 | .90 | .58 | .45 | .20 | .10 | .00 |
| 18 | .30 | .50 | .50 | .90 | .55 | .80 | .95 | .60 | .42 | .20 | .00 | .00 |
| 19 | .30 | .50 | .50 | .80 | .55 | .80 | .95 | .55 | .42 | .15 | .00 | .00 |
| 20 | .30 | .50 | .48 | .70 | .55 | .80 | .90 | .55 | .40 | .15 | .00 | .00 |
| 21 | .30 | .50 | .45 | .70 | .55 | .80 | .90 | .55 | .40 | .28 | .00 | .00 |
| 22 | .30 | .50 | .45 | .70 | .60 | .90 | .90 | .52 | .40 | .40 | .00 | .00 |
| 23 | .30 | .50 | .45 | .70 | .62 | .90 | .95 | .52 | .38 | .38 | .00 | .10 |
| 24 | .30 | .50 | .45 | .70 | 1.00 | .95 | .95 | .52 | .38 | .35 | .00 | .10 |
| 25 | .30 | .50 | .45 | .70 | .90 | 1.00 | 1.05 | .52 | .38 | .35 | .00 | .10 |
| 26 | .30 | .45 | .45 | .70 | .90 | .90 | 1.00 | .52 | .45 | .30 | .00 | .10 |
| 27 | .30 | .45 | .45 | .70 | .90 | .95 | 1.00 | .52 | .65 | .30 | .25 | .10 |
| 29 | .35 | .45 | .45 | .60 | .90 | 1.00 | .90 | 1.10 | .60 | .30 | .35 | .10 |
| 29 | .35 | .45 | .45 | .60 | ..... | 1.10 | .90 | .90 | .58 | .30 | .20 | .10 |
| 30 | .35 | .45 | .45 | .60 | ..... | 1.20 | .90 | .90 | .52 | .30 | .40 | .10 |
| 31 | .35 | ..... | .45 | .60 | ..... | 1.20 | ..... | .80 | ..... | .30 | .35 | .10 |

*Daily discharge, in second-feet, of South Fork of Tule River near Portersville, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 9.5 | 17 | 11 | 120 | 33 | 54 | 76 | 33 | 12 | 3.8 | 2.5 |
| 2 | ..... | 9.2 | 17 | 11 | 93 | 33 | 64 | 70 | 27 | 12 | 3.8 | 2.5 |
| 3 | ..... | 9.5 | 17 | 11 | 70 | 41 | 76 | 59 | 27 | 11 | 3.8 | 2.5 |
| 4 | ..... | 13 | 24 | 11 | 93 | 81 | 59 | 49 | 27 | 11 | 3.8 | 2.5 |
| 5 | ..... | 14 | 21 | 11 | 64 | 59 | 167 | 54 | 27 | 9.5 | 3.8 | 2.5 |
| 6 | ..... | 12 | 16 | 12 | 59 | 49 | 150 | 64 | 30 | 9.5 | 3.8 | 2.5 |
| 7 | ..... | 12 | 12 | 12 | 49 | 49 | 120 | 64 | 27 | 9.5 | 3.8 | 2.5 |
| 8 | ..... | 12 | 9.8 | 11 | 41 | 350 | 106 | 54 | 27 | 9.5 | 3.8 | 2.5 |
| 9 | ..... | 11 | 9.5 | 11 | 33 | 273 | 100 | 49 | 27 | 9.5 | 3 | 2.5 |
| 10 | 3.2 | 9.8 | 8.9 | 81 | 33 | 404 | 93 | 49 | 24 | 9.5 | 3 | 2.5 |
| 11 | 5.1 | 9.5 | 9.5 | 30 | 41 | 250 | 81 | 33 | 27 | 9.5 | 3 | 2.5 |
| 12 | 3.9 | 12 | 9.5 | 27 | 37 | 167 | 81 | 41 | 33 | 9.5 | 3 | 2.5 |
| 13 | 3.6 | 14 | 10 | 19 | 41 | 135 | 87 | 49 | 33 | 9.5 | 3.8 | 2.5 |
| 14 | 3.6 | 13 | 11 | 16 | 106 | 120 | 81 | 54 | 33 | 8 | 3 | 2.5 |
| 15 | 3.4 | 13 | 11 | 16 | 70 | 120 | 81 | 49 | 30 | 8 | 3 | 2.5 |
| 16 | 12 | 12 | 11 | 16 | 45 | 120 | 70 | 59 | 27 | 8 | 3 | 2.5 |
| 17 | 11 | 12 | 11 | 14 | 41 | 81 | 59 | 54 | 21 | 6.5 | 3 | 2 |
| 18 | 10 | 12 | 11 | 16 | 49 | 81 | 49 | 45 | 21 | 6.5 | 3 | 2 |
| 19 | 8.9 | 13 | 11 | 14 | 49 | 81 | 49 | 33 | 21 | 6.5 | 3 | 2 |
| 20 | 7.4 | 15 | 28 | 14 | 41 | 81 | 70 | 33 | 21 | 6.5 | 3 | 2 |
| 21 | 7.1 | 15 | 29 | 59 | 33 | 93 | 49 | 45 | 21 | 6.5 | 3 | 2 |
| 22 | 7.1 | 14 | 28 | 37 | 33 | 93 | 49 | 49 | 21 | 6.5 | 3 | 2 |
| 23 | 7.1 | 14 | 21 | 24 | 33 | 81 | 49 | 45 | 21 | 6.5 | 3 | 2 |
| 24 | 7.4 | 14 | 17 | 250 | 33 | 81 | 49 | 33 | 21 | 6.5 | 3 | 2 |
| 25 | 7.7 | 16 | 14 | 120 | 33 | 81 | 49 | 33 | 21 | 6.5 | 3 | 2 |
| 26 | 7.4 | 16 | 14 | 41 | 30 | 81 | 49 | 33 | 21 | 6.5 | 3 | 2 |
| 27 | 7.4 | 17 | 14 | 27 | 33 | 93 | 81 | 33 | 19 | 4.5 | 3 | 2.2 |
| 28 | 7.1 | 17 | 14 | 41 | 33 | 76 | 81 | 33 | 19 | 4.5 | 3 | 6.5 |
| 29 | 7.1 | 16 | 12 | 186 | ..... | 59 | 76 | 33 | 19 | 4.5 | 2.5 | 6.5 |
| 30 | 7.1 | 16 | 12 | 93 | ..... | 41 | 70 | 33 | 19 | 4.5 | 2.5 | 6.5 |
| 31 | 7.4 | ..... | 11 | 377 | ..... | 33 | ..... | 33 | ..... | 3.8 | 2.5 | ..... |

*Daily discharge, in second-feet, of South Fork of Tule River near Portersville, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1911-12. | | | | | | | | | | |
| 1 | 6.5 | 6.5 | 9.5 | ..... | 33 | 70 | 59 | 14 | 3.8 | 3 |
| 2 | 6.5 | 6.5 | 9.5 | ..... | 33 | 70 | 49 | 14 | 3.8 | 3 |
| 3 | 6.1 | 6.5 | 9.5 | ..... | 27 | 49 | 49 | 14 | 3.8 | 3 |
| 4 | 5.5 | 6.5 | 9.5 | ..... | 27 | 33 | 49 | 14 | 3.8 | 3 |
| 5 | 6.5 | 8 | 9.5 | ..... | 27 | 33 | 49 | 14 | 3.8 | 3 |
| 6 | 6.5 | 8 | 11 | ..... | 27 | 33 | 41 | 14 | 3.8 | 2.5 |
| 7 | 6.5 | 6.5 | 12 | ..... | 27 | 33 | 41 | 12 | 3.8 | 2.5 |
| 8 | 6.5 | 6.5 | 12 | ..... | 27 | 33 | 33 | 12 | 3.8 | 2.5 |
| 9 | 9.5 | 6.5 | 12 | ..... | 49 | 33 | 33 | 12 | 3.8 | 2.5 |
| 10 | 8.9 | 8 | 12 | ..... | 70 | 33 | 33 | 12 | 3.8 | 2.5 |
| 11 | 8 | 11 | 12 | ..... | 93 | 33 | 33 | 12 | 3.8 | 2.5 |
| 12 | 8 | 11 | 12 | 21 | 93 | 70 | 33 | 12 | 3.8 | 2.5 |
| 13 | 8 | 11 | 12 | 21 | 93 | 70 | 33 | 12 | 3.8 | 2.5 |
| 14 | 8 | 11 | 12 | 27 | 93 | 81 | 33 | 12 | 3.8 | 2.5 |
| 15 | 8 | 9.5 | 12 | 41 | 93 | 81 | 33 | 11 | 3.8 | 2.5 |
| 16 | 8 | 9.5 | 12 | 33 | 81 | 70 | 33 | 11 | 3.8 | 2.5 |
| 17 | 8 | 9.5 | 14 | 30 | 81 | 70 | 33 | 11 | 3 | 2.5 |
| 18 | 8 | 9.5 | 13 | 21 | 81 | 70 | 33 | 9.5 | 3 | 2.5 |
| 19 | 8 | 9.5 | 12 | 27 | 81 | 93 | 27 | 9.5 | 3 | 2.5 |
| 20 | 8 | 8 | 14 | 33 | 81 | 93 | 21 | 9.5 | 3 | 2.5 |
| 21 | 8 | 8 | 14 | 33 | 81 | 81 | 21 | 8 | 3 | 2.5 |
| 22 | 6.5 | 8 | 14 | 27 | 81 | 76 | 19 | 8 | 3 | 2.5 |
| 23 | 6.5 | 8 | 14 | 27 | 81 | 76 | 19 | 6.5 | 3 | 2.5 |
| 24 | 6.5 | 8 | 12 | 27 | 81 | 70 | 19 | 5.5 | 3 | 2.5 |
| 25 | 6.5 | 8 | 11 | 27 | 81 | 70 | 19 | 4.5 | 3 | 2.5 |
| 26 | 6.5 | 9.5 | 9.5 | 33 | 106 | 70 | 16 | 4.5 | 3 | 2.5 |
| 27 | 6.5 | 9.5 | 9.5 | 33 | 120 | 59 | 16 | 4.5 | 3 | 3 |
| 28 | 6.5 | 9.5 | 11 | 33 | 87 | 59 | 16 | 4.5 | 3 | 3 |
| 29 | 6.5 | 9.5 | 13 | 33 | 76 | 59 | 16 | 4.5 | 3 | 3 |
| 30 | 6.5 | 9.5 | 12 | 33 | 81 | 59 | 16 | 4.2 | 3 | 3 |
| 31 | 6.5 | ..... | 12 | 33 | ..... | 59 | ..... | 3.8 | 3 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 3 | 5.5 | 9.5 | 8 | 16 | 27 | 49 | 27 | 20 | 9.5 | 3 | 16 |
| 2 | 3 | 5.5 | 9.5 | 8 | 16 | 24 | 33 | 21 | 17 | 8 | 3 | 8 |
| 3 | 3 | 6.5 | 9.5 | 8 | 16 | 24 | 27 | 21 | 17 | 6.5 | 2 | 4.9 |
| 4 | 3 | 9.5 | 9.5 | 8 | 16 | 21 | 33 | 21 | 17 | 6.5 | 1 | 3.8 |
| 5 | 4.5 | 9.5 | 9.5 | 8 | 16 | 21 | 33 | 21 | 17 | 6.5 | 1 | 3 |
| 6 | 5.5 | 8 | 9.5 | 8 | 16 | 24 | 37 | 21 | 17 | 5.5 | 1 | 3 |
| 7 | 6.5 | 8 | 9.5 | 8 | 16 | 33 | 27 | 21 | 17 | 5.5 | 1 | 3 |
| 8 | 6.5 | 8 | 9.5 | 8 | 27 | 33 | 27 | 21 | 16 | 4.9 | 1 | 2.5 |
| 9 | 5.5 | 8 | 9.5 | 9.5 | 21 | 27 | 30 | 16 | 16 | 4.5 | 1 | 2.5 |
| 10 | 4.5 | 12 | 9.5 | 12 | 16 | 27 | 33 | 16 | 13 | 4.5 | 1 | 2 |
| 11 | 4.5 | 12 | 9.5 | 24 | 16 | 24 | 33 | 16 | 12 | 4.5 | 1 | 1 |
| 12 | 4.5 | 12 | 9.5 | 27 | 14 | 21 | 30 | 16 | 12 | 4.5 | 1 | 1 |
| 13 | 4.5 | 12 | 9.5 | 21 | 14 | 21 | 30 | 16 | 10 | 4.5 | 1 | 1 |
| 14 | 4.5 | 11 | 8 | 21 | 12 | 21 | 33 | 13 | 10 | 3.8 | 1 | 1 |
| 15 | 4.5 | 11 | 12 | 16 | 12 | 19 | 27 | 13 | 9.5 | 3.8 | 1 | 1 |
| 16 | 4.5 | 11 | 11 | 27 | 11 | 19 | 30 | 12 | 8.9 | 3.8 | 1 | 1 |
| 17 | 4.5 | 9.5 | 9.5 | 30 | 11 | 16 | 27 | 12 | 8 | 3 | 2 | 1 |
| 18 | 4.5 | 9.5 | 9.5 | 27 | 11 | 21 | 30 | 12 | 7.1 | 3 | 1 | 1 |
| 19 | 4.5 | 9.5 | 9.5 | 21 | 11 | 21 | 30 | 11 | 7.1 | 2.5 | 1 | 1 |
| 20 | 4.5 | 9.5 | 8.9 | 16 | 11 | 21 | 27 | 11 | 6.5 | 2.5 | 1 | 1 |
| 21 | 4.5 | 9.5 | 8 | 16 | 11 | 21 | 27 | 11 | 6.5 | 4.2 | 1 | 1 |
| 22 | 4.5 | 9.5 | 8 | 16 | 12 | 27 | 27 | 10 | 6.5 | 6.5 | 1 | 1 |
| 23 | 4.5 | 9.5 | 8 | 16 | 13 | 27 | 30 | 10 | 6.1 | 6.1 | 1 | 2 |
| 24 | 4.5 | 9.5 | 8 | 16 | 33 | 30 | 30 | 10 | 6.1 | 5.5 | 1 | 2 |
| 25 | 4.5 | 9.5 | 8 | 16 | 27 | 33 | 37 | 10 | 6.1 | 5.5 | 1 | 2 |
| 26 | 4.5 | 8 | 8 | 16 | 27 | 27 | 33 | 10 | 8 | 4.5 | 1 | 2 |
| 27 | 4.5 | 8 | 8 | 16 | 27 | 30 | 33 | 10 | 14 | 4.5 | 3.8 | 2 |
| 28 | 5.5 | 8 | 8 | 12 | 27 | 33 | 27 | 41 | 12 | 4.5 | 5.5 | 2 |
| 29 | 5.5 | 8 | 8 | 12 | ..... | 41 | 27 | 27 | 12 | 4.5 | 3 | 2 |
| 30 | 5.5 | 8 | 8 | 12 | ..... | 49 | 27 | 27 | 10 | 4.5 | 6.5 | 2 |
| 31 | 5.5 | ..... | 8 | 12 | ..... | 49 | ..... | 21 | ..... | 4.5 | 5.5 | ..... |

NOTE.—Daily discharge determined from a fairly well defined rating curve. Apr. 22–26, 1911, discharge estimated. Jan. 1 to Mar. 11, 1912, discharge estimated from observer's notes as follows: Jan. 1–31, 10 second-feet; Feb. 1–28, 10 second-feet; Mar. 1–11, 21 second-feet.

*Monthly discharge of South Fork of Tule River near Portersville, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1910–11. | | | | | |
| Oct. 10–31 | 12 | 3.2 | 6.91 | 302 | C. |
| November | 17 | 9.2 | 13.1 | 780 | C. |
| December | 29 | 8.9 | 14.9 | 916 | B. |
| January | 377 | 11 | 52.2 | 3,210 | B. |
| February | 120 | 30 | 51.3 | 2,850 | B. |
| March | 404 | 33 | 110 | 6,760 | C. |
| April | 167 | 49 | 76.6 | 4,560 | C. |
| May | 76 | 33 | 46.5 | 2,860 | B. |
| June | 33 | 19 | 24.8 | 1,480 | B. |
| July | 12 | 3.8 | 7.82 | 481 | C. |
| August | 3.8 | 3.8 | 3.18 | 196 | C. |
| September | 6.5 | 2 | 2.72 | 162 | C. |
| The period | ..... | ..... | ..... | 24,600 | |
| 1911–12. | | | | | |
| October | 9.5 | 5.5 | 7.16 | 440 | C. |
| November | 11 | 6.5 | 8.55 | 509 | C. |
| December | 14 | 9.5 | 11.7 | 719 | C. |
| January | ..... | ..... | [a] 10 | 615 | D. |
| February | ..... | ..... | [a] 10 | 555 | D. |
| March | 41 | ..... | [a] 26.6 | 1,640 | C. |
| April | 120 | 27 | 69.7 | 4,150 | B. |
| May | 93 | 33 | 60.9 | 3,740 | B. |
| June | 59 | 16 | 30.8 | 1,830 | B. |
| July | 14 | 3.8 | 9.68 | 595 | C. |
| August | 3.8 | 3 | 3.41 | 210 | C. |
| September | 3 | 2.5 | 2.65 | 158 | C. |
| The year | 120 | ..... | 21.0 | 15,200 | |
| 1912–13. | | | | | |
| October | 6.5 | 3 | 4.63 | 285 | C. |
| November | 12 | 5.5 | 9.17 | 546 | C. |
| December | 12 | 8 | 9.03 | 555 | C. |
| January | 30 | 8 | 15.3 | 941 | B. |
| February | 33 | 11 | 17.0 | 944 | B. |
| March | 49 | 16 | 26.8 | 1,650 | B. |
| April | 49 | 27 | 30.8 | 1,830 | B. |
| May | 41 | 10 | 16.9 | 1,040 | B. |
| June | 20 | 6.1 | 11.5 | 684 | C. |
| July | 9.5 | 2.5 | 4.92 | 303 | C. |
| August | 6.5 | 1 | 1.82 | 112 | D. |
| September | 16 | 1 | 2.56 | 152 | C. |
| The year | 49 | 1 | 12.5 | 9,040 | |

[a] Estimated from observer's notes.

## MIDDLE FORK OF KAWEAH RIVER NEAR HAMMOND, CAL.

LOCATION.—In the SE. ¼ sec. 24, T. 16 S., R. 29 E., in Sequoia National Park, about 2,000 feet below Moro trail and 6 miles northeast of Hammond.

RECORDS AVAILABLE.—July 20 to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to rock ledge on right bank.

CHANNEL.—Large bowlders; very rough. A solid rock dike extends across channel 25 feet below gage, forming a permanent control.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

COOPERATION.—Gage-height record furnished by Sequoia National Park through Walter Fry, acting superintendent.

*Discharge measurements of Middle Fork of Kaweah River near Hammond, Cal., during the years 1913–14.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date | Gage height. | Discharge. |
|---|---|---|---|---|---|
| 1913. | *Feet.* | *Sec.-ft.* | 1914. | *Feet.* | *Sec.-ft.* |
| July 20 | 6.00 | *a* 52 | Oct. 16 | 5.50 | 22 |

*a* 2 second-feet have been added as estimated flow in second channel.

*Daily gage height, in feet, and discharge, in second-feet, of Middle Fork of Kaweah River near Hammond, Cal., for the year ending Sept. 30, 1913.*

| Day. | July. | | August. | | Day. | July. | | August. | | Day. | July. | | August. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | 6.1 | 60 | 11 | | | 6.1 | 60 | 21 | | | 5.9 | 45 |
| 2 | | | 6.3 | 78 | 12 | | | 6.2 | 69 | 22 | | | 6.0 | 52 |
| 3 | | | 6.2 | 69 | 13 | | | 6.1 | 60 | 23 | | | 6.0 | 52 |
| 4 | | | 6.2 | 69 | 14 | | | 6.15 | 64 | 24 | | | 6.0 | 52 |
| 5 | | | 6.0 | 52 | 15 | | | 5.98 | 51 | 25 | | | | |
| 6 | | | 6.0 | 52 | 16 | | | 6.0 | 52 | 26 | | | 6.1 | 60 |
| 7 | | | 5.9 | 45 | 17 | | | 6.0 | 52 | 27 | | | | |
| 8 | | | 5.8 | 38 | 18 | | | 6.05 | 56 | 28 | 6.4 | 88 | | |
| 9 | | | 6.1 | 60 | 19 | | | 6.0 | 52 | 29 | 6.4 | 88 | | |
| 10 | | | 6.0 | 52 | 20 | 6.0 | 52 | 5.95 | 48 | 30 | 6.25 | 74 | | |
| | | | | | | | | | | 31 | 6.2 | 69 | | |

## KAWEAH RIVER NEAR THREE RIVERS, CAL.

LOCATION.—In the SE. ¼ sec. 27, T. 17 S., R. 28 E., at the J. O. Carter ranch, 1¼ miles southwest of Three Rivers. North Fork enters about 3 miles and South Fork three-fourths mile above the station.

RECORDS AVAILABLE.—April 29, 1903, to September 30, 1913.

DRAINAGE AREA.—520 square miles.

GAGE.—Staff in two sections on left bank one-fourth mile back of observer's house; vertical high-water section fastened to willow tree; inclined low-water section fastened to posts. Gage of United States Weather Bureau at same location and datum has been used since December 5, 1912.

CHANNEL.—Gravel and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—Several small ditches divert water for local irrigation and domestic use above the station. Power is also developed on the Middle and East forks.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Kaweah River near Three Rivers, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 5 | J. E. Stewart | 4.42 | 49 | June 9 | E. C. Murphy | 6.26 | 795 |
| Apr. 11 | H. J. Tompkins | 5.85 | 536 | 10 | do | 6.14 | 722 |
| 29 | E. C. Murphy | 6.42 | 928 | July 22 | H. J. Tompkins | 4.96 | 175 |

NOTE.—Gage heights refer to U. S. Weather Bureau gage.

*Daily gage height, in feet, of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

[J. O. Carter, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.22 | 4.40 | 4.34 | 4.40 | 4.70 | 4.98 | 6.1 | 6.05 | 6.6 | 5.7 | 4.95 | 6.65 |
| 2 | 4.22 | 4.40 | 4.34 | 4.40 | 4.70 | 4.95 | 6.05 | 5.9 | 6.6 | 5.7 | 5.12 | 5.70 |
| 3 | 4.25 | 4.40 | 4.30 | 4.40 | 4.70 | 5.00 | 5.7 | 5.85 | 6.5 | 5.6 | 5.00 | 5.40 |
| 4 | 4.25 | 4.40 | 4.30 | 4.40 | 4.70 | 4.95 | 5.7 | 5.95 | 6.45 | 5.6 | 4.92 | 5 22 |
| 5 | 4.28 | ..... | 4.30 | 4.40 | 4.70 | 5.25 | 5.8 | 6.3 | 6.5 | 5.5 | 4.88 | 5.08 |
| 6 | 4.30 | 4.40 | 4.30 | 4.40 | 4.70 | 5.40 | ..... | 6.6 | 6.5 | 5.48 | 4.82 | 5.02 |
| 7 | 4.30 | 4.40 | 4.30 | 4.30 | 4.70 | 5.40 | ..... | 6.7 | 6.4 | 5.45 | 4.76 | 4.95 |
| 8 | 4.30 | 4.40 | 4.30 | 4.45 | 4.82 | 5.50 | ..... | 6.6 | 6.4 | 5.35 | 4.75 | 4.90 |
| 9 | 4.30 | 4.40 | 4.30 | 4.50 | 4.90 | 5.42 | ..... | 6.7 | 6.3 | 5.30 | 4.75 | 4.82 |
| 10 | 4.30 | 4.45 | 4.32 | 4.50 | 4.80 | 5.45 | ..... | 6.7 | 6.2 | 5.25 | 4.75 | 4.79 |
| 11 | 4.30 | 4.50 | 4.35 | 4.50 | 4.79 | 5.40 | 5.85 | 6.7 | 6.05 | 5.15 | 4.72 | 4.72 |
| 12 | 4.30 | 4.55 | 4.35 | 4.45 | 4.79 | 5.25 | ..... | 6.8 | 6.2 | 5.12 | 4.68 | 4.68 |
| 13 | 4.29 | 4.50 | 4.40 | 4.45 | 4.78 | 5.20 | ..... | 6.6 | 6.3 | 5.08 | 4.60 | 4.70 |
| 14 | 4.26 | 4.50 | 4.45 | 4.48 | 4.79 | 5.10 | ..... | 6.4 | 6.3 | 5.02 | 4.55 | 4.65 |
| 15 | 4.25 | 4.50 | 4.48 | 4.65 | 4.80 | 5.00 | ..... | 6.5 | 6.25 | 5.00 | 4.55 | 4.62 |
| 16 | 4.28 | 4.50 | 4.50 | 4.95 | 4.80 | 5.00 | ..... | 6.75 | 6.2 | 4.95 | 4.55 | 4.60 |
| 17 | 4.28 | 4.48 | 4.45 | 4.85 | 4.80 | 5.00 | ..... | 6.9 | 6.0 | 4.88 | 4.55 | 4.58 |
| 18 | 4.28 | 4.45 | 4.45 | 4.78 | 4.90 | 5.10 | ..... | 6.9 | 6.1 | 4.85 | 4.50 | 4.52 |
| 19 | 4.28 | 4.42 | ..... | 4.75 | 4.80 | 5.20 | ..... | 6.5 | 5.85 | 4.85 | 4.48 | 4.50 |
| 20 | 4.30 | 4.40 | ..... | 4.70 | 4.80 | 5.15 | ..... | 6.7 | 5.9 | 4.82 | 4.45 | 4.50 |
| 21 | 4.30 | 4.40 | ..... | 4.68 | 4.80 | 5.20 | ..... | 6.8 | 5.9 | 4.82 | 4.45 | 4.50 |
| 22 | 4.30 | 4.40 | 4.40 | 4.68 | 4.85 | 5.20 | 5.7 | 6.9 | 5.9 | 4.86 | 4.50 | 4.50 |
| 23 | 4.30 | 4.40 | 4.40 | 4.61 | 4.75 | 5.10 | 5.95 | 7.0 | 5.8 | 5.05 | 4.50 | 4.50 |
| 24 | 4.30 | 4.40 | 4.40 | 4.60 | 4.80 | 5.15 | 6.15 | 7.0 | 5.8 | 5.42 | 4.60 | 4.50 |
| 25 | 4.30 | 4.38 | 4.40 | 4.62 | 5.40 | 5.08 | 6.35 | 6.9 | 5.7 | 5.36 | 4.65 | 4.48 |
| 26 | 4.30 | 4.38 | 4.40 | 4.70 | 5.25 | 5.05 | 6.5 | 6.75 | 5.7 | 5.18 | 4.85 | 4.50 |
| 27 | 4.30 | 4.38 | 4.40 | 4.70 | 5.10 | 5.15 | 6.65 | 6.65 | 6.05 | 5.24 | 5.90 | 4.48 |
| 28 | 4.40 | 4.38 | 4.40 | 4.70 | 5.00 | 5.25 | 6.6 | 7.0 | 5.9 | 5.38 | 6.10 | 4.45 |
| 29 | 4.40 | 4.38 | 4.40 | 4.70 | ..... | 5.28 | 6.5 | 6.55 | 5.8 | 5.42 | 5.50 | 4.45 |
| 30 | 4.40 | 4.38 | 4.40 | 4.70 | ..... | 5.60 | 6.25 | 6.6 | 5.7 | 5.18 | 5.55 | 4.45 |
| 31 | 4.40 | ..... | 4.45 | 4.70 | ..... | 5.90 | ..... | 6.6 | ..... | 5.02 | 6.15 | ..... |

NOTE.—Oct. 1 to Dec. 4, 1912, readings from United States Geological Survey gage; Dec. 5, 1912, to Sept. 30, 1913, readings from United States Weather Bureau gage.

*Daily discharge, in second-feet, of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32 | 48 | 42 | 48 | 102 | 170 | 685 | 652 | 1,090 | 450 | 162 | 1,140 |
| 2 | 32 | 48 | 42 | 48 | 102 | 162 | 652 | 560 | 1,090 | 450 | 212 | 450 |
| 3 | 34 | 48 | 38 | 48 | 102 | 175 | 450 | 532 | 1,000 | 400 | 175 | 315 |
| 4 | 34 | 48 | 38 | 48 | 102 | 162 | 450 | 590 | 958 | 400 | 155 | 247 |
| 5 | 36 | 48 | 39 | 48 | 102 | 258 | 505 | 830 | 1,000 | 355 | 145 | 199 |
| 6 | 38 | 48 | 39 | 48 | 102 | 315 | 505 | 1,090 | 1,000 | 347 | 130 | 181 |
| 7 | 38 | 48 | 39 | 39 | 102 | 315 | 505 | 1,180 | 915 | 335 | 116 | 162 |
| 8 | 38 | 48 | 39 | 56 | 130 | 355 | 478 | 1,090 | 915 | 295 | 114 | 150 |
| 9 | 38 | 48 | 39 | 63 | 150 | 323 | 450 | 1,180 | 830 | 275 | 114 | 130 |
| 10 | 38 | 54 | 41 | 63 | 125 | 335 | 505 | 1,180 | 755 | 258 | 114 | 123 |
| 11 | 38 | 60 | 44 | 63 | 123 | 315 | 532 | 1,180 | 652 | 222 | 107 | 107 |
| 12 | 38 | 67 | 44 | 56 | 123 | 258 | 560 | 1,280 | 755 | 212 | 98 | 98 |
| 13 | 37 | 60 | 48 | 56 | 120 | 240 | 620 | 1,090 | 830 | 199 | 81 | 102 |
| 14 | 35 | 60 | 56 | 60 | 123 | 205 | 620 | 915 | 830 | 181 | 72 | 92 |
| 15 | 34 | 60 | 60 | 92 | 125 | 175 | 560 | 1,000 | 792 | 175 | 72 | 85 |
| 16 | 36 | 60 | 63 | 162 | 125 | 175 | 560 | 1,230 | 755 | 162 | 72 | 81 |
| 17 | 36 | 58 | 56 | 138 | 125 | 175 | 590 | 1,370 | 620 | 145 | 72 | 77 |
| 18 | 36 | 54 | 56 | 120 | 150 | 205 | 590 | 1,370 | 685 | 138 | 63 | 67 |
| 19 | 36 | 50 | 52 | 114 | 125 | 240 | 560 | 1,000 | 532 | 138 | 60 | 63 |
| 20 | 38 | 48 | 50 | 102 | 125 | 222 | 532 | 1,180 | 560 | 130 | 56 | 63 |
| 21 | 38 | 48 | 48 | 98 | 125 | 240 | 505 | 1,280 | 560 | 130 | 56 | 63 |
| 22 | 38 | 48 | 48 | 98 | 138 | 240 | 450 | 1,370 | 560 | 140 | 63 | 63 |
| 23 | 38 | 48 | 48 | 83 | 114 | 205 | 590 | 1,470 | 505 | 190 | 63 | 63 |
| 24 | 38 | 48 | 48 | 81 | 125 | 222 | 720 | 1,470 | 505 | 323 | 81 | 63 |
| 25 | 38 | 46 | 48 | 85 | 315 | 199 | 872 | 1,370 | 450 | 299 | 92 | 60 |
| 26 | 38 | 46 | 48 | 102 | 258 | 190 | 1,000 | 1,230 | 450 | 233 | 138 | 63 |
| 27 | 38 | 46 | 48 | 102 | 205 | 222 | 1,140 | 1,140 | 652 | 254 | 560 | 60 |
| 28 | 48 | 46 | 48 | 102 | 175 | 258 | 1,000 | 1,470 | 560 | 307 | 685 | 56 |
| 29 | 48 | 46 | 48 | 102 | ..... | 268 | 1,000 | 1,040 | 505 | 323 | 355 | 56 |
| 30 | 48 | 46 | 48 | 102 | ..... | 400 | 792 | 1,090 | 450 | 233 | 378 | 56 |
| 31 | 48 | ..... | 56 | 102 | ..... | 560 | ..... | 1,090 | ..... | 181 | 720 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. For days for which gage heights are not recorded, discharge estimated by comparison with that of South Fork of Kaweah River near Three Rivers.

*Monthly discharge of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 520 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 48 | 32 | 38.1 | 0.073 | 0.08 | 2,340 | A. |
| November | 67 | 46 | 51.0 | .098 | .11 | 3,040 | A. |
| December | 63 | 38 | 47.1 | .091 | .10 | 2,900 | B. |
| January | 162 | 39 | 81.6 | .157 | .18 | 5,020 | A. |
| February | 315 | 102 | 137 | .263 | .27 | 7,610 | A. |
| March | 560 | 162 | 251 | .483 | .56 | 15,400 | A. |
| April | 1,140 | 450 | 636 | 1.22 | 1.36 | 37,800 | B. |
| May | 1,470 | 532 | 1,110 | 2.13 | 2.46 | 68,200 | A. |
| June | 1,090 | 450 | 725 | 1.39 | 1.55 | 43,100 | A. |
| July | 450 | 130 | 254 | .488 | .56 | 15,600 | A. |
| August | 720 | 56 | 174 | .335 | .39 | 10,700 | A. |
| September | 1,140 | 56 | 151 | .290 | .32 | 8,990 | A. |
| The year | 1,470 | 32 | 305 | .587 | 7.94 | 221,000 | |

## MARBLE FORK OF KAWEAH RIVER NEAR RANGER, CAL.

LOCATION.—In the SE. ¼ NE. ¼ sec. 35, T. 15 S., R. 29 E., at highway bridge, in Sequoia National Park, about 1½ miles northwest of Ranger.

RECORDS AVAILABLE.—July 19 to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to rock ledge on right bank underneath bridge.

CHANNEL.—Large bowlders and gravel; rough.

DISCHARGE MEASUREMENTS.—Made by wading just above control, 75 feet below gage.

COOPERATION.—Gage-height record furnished by Sequoia National Park through Walter Fry, acting superintendent.

*Discharge measurements of Marble Fork of Kaweah River near Ranger, Cal., during the years 1913 and 1914.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| 1913. | *Feet.* | *Sec.-ft.* | 1914. | *Feet.* | *Sec.-ft.* |
| July 19 | 5.98 | 18 | Oct. 15 | 5.43 | 5.9 |

*Daily gage height, in feet, and discharge, in second-feet, of Marble Fork of Kaweah River near Ranger, Cal., for the year ending Sept. 30, 1913.*

| Day. | July. | | August. | | September. | | Day. | July. | | August. | | September. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 6.1 | 21 | ..... | ..... | 16 | ..... | ..... | 5.7 | 11 | ..... | ..... |
| 2 | ..... | ..... | 6.1 | 21 | 5.6 | 9 | 17 | ..... | ..... | 5.7 | 11 | ..... | ..... |
| 3 | ..... | ..... | 6.0 | 18 | ..... | ..... | 18 | ..... | ..... | 5.7 | 11 | 5.6 | 9 |
| 4 | ..... | ..... | 6.0 | 18 | 5.6 | 9 | 19 | 6.1 | 21 | 5.7 | 11 | ..... | ..... |
| 5 | ..... | ..... | 5.9 | 16 | 5.6 | 9 | 20 | ..... | ..... | 5.6 | 9 | 5.7 | 11 |
| 6 | ..... | ..... | 5.8 | 13 | ..... | ..... | 21 | ..... | ..... | 5.6 | 9 | ..... | ..... |
| 7 | ..... | ..... | 5.6 | 9 | 5.7 | 11 | 22 | ..... | ..... | 5.6 | 9 | ..... | ..... |
| 8 | ..... | ..... | 5.8 | 13 | ..... | ..... | 23 | ..... | ..... | 5.6 | 9 | 5.7 | 11 |
| 9 | ..... | ..... | 5.8 | 13 | 5.7 | 11 | 24 | ..... | ..... | 5.7 | 11 | 5.6 | 9 |
| 10 | ..... | ..... | 5.6 | 9 | ..... | ..... | 25 | ..... | ..... | 5.9 | 16 | 5.6 | 9 |
| 11 | ..... | ..... | 5.8 | 13 | ..... | ..... | 26 | ..... | ..... | 6.0 | 18 | ..... | ..... |
| 12 | ..... | ..... | 5.8 | 13 | 5.7 | 11 | 27 | ..... | ..... | 5.95 | 17 | 5.7 | 11 |
| 13 | ..... | ..... | 5.8 | 13 | ..... | ..... | 28 | 6.7 | 43 | 5.8 | 13 | ..... | ..... |
| 14 | ..... | ..... | 5.7 | 11 | 5.6 | 9 | 29 | 6.8 | 48 | 5.7 | 11 | ..... | ..... |
| 15 | ..... | ..... | 5.7 | 11 | ..... | ..... | 30 | 6.3 | 27 | 5.8 | 13 | 5.5 | 7 |
| | | | | | | | 31 | 6.3 | 27 | ..... | ..... | ..... | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve.

## EAST FORK OF KAWEAH RIVER NEAR HAMMOND, CAL.

LOCATION.—In the NW. ¼ NW. ¼ sec. 19, T. 17 S., R. 30 E., at Grunigen ranch about midway between Squirrel and Grunigen creeks, and 5 miles southeast of Hammond.

RECORDS AVAILABLE.—July 21 to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to bowlder on right bank 50 feet below trail from Grunigen ranch.

CHANNEL.—Large bowlders and gravel; very rough.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

COOPERATION.—Gage-height record furnished by Sequoia National Park through Walter Fry, acting superintendent.

*Discharge measurements of East Fork of Kaweah River near Hammond, Cal., during the years 1913 and 1914.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| 1913. | *Feet.* | *Sec.-ft.* | 1914. | *Feet.* | *Sec.-ft.* |
| July 21 | 5.70 | 45 | Oct. 17 | 5.39 | 23 |

*Daily gage height, in feet, and discharge, in second-feet, of East Fork of Kaweah River near Hammond, Cal., for the year ending Sept. 30, 1913.*

| Day. | July. | | August. | | Day. | July. | | August. | | Day. | July. | | August. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 5.9 | 64 | 11 | ..... | ..... | 5.8 | 54 | 21 | 5.7 | 45 | 5.7 | 45 |
| 2 | ..... | ..... | 5.8 | 54 | 12 | ..... | ..... | 5.8 | 54 | 22 | ..... | ..... | 5.7 | 45 |
| 3 | ..... | ..... | 5.8 | 54 | 13 | ..... | ..... | 5.8 | 54 | 23 | ..... | ..... | 5.7 | 45 |
| 4 | ..... | ..... | 5.7 | 45 | 14 | ..... | ..... | 5.7 | 45 | 24 | ..... | ..... | ..... | ..... |
| 5 | ..... | ..... | 5.8 | 54 | 15 | ..... | ..... | 5.7 | 45 | 25 | ..... | ..... | ..... | ..... |
| 6 | ..... | ..... | 5.8 | 54 | 16 | ..... | ..... | 5.8 | 54 | 26 | ..... | ..... | ..... | ..... |
| 7 | ..... | ..... | 5.8 | 54 | 17 | ..... | ..... | 5.7 | 45 | 27 | ..... | ..... | ..... | ..... |
| 8 | ..... | ..... | 5.8 | 54 | 18 | ..... | ..... | 5.7 | 45 | 28 | ..... | ..... | ..... | ..... |
| 9 | ..... | ..... | 5.9 | 64 | 19 | ..... | ..... | 5.7 | 45 | 29 | ..... | ..... | ..... | ..... |
| 10 | ..... | ..... | 5.9 | 64 | 20 | ..... | ..... | 5.7 | 45 | 30 | ..... | ..... | ..... | ..... |
| | | | | | | | | | | 31 | 5.8 | 54 | ..... | ..... |

NOTE.—Discharge determined from a fairly well-defined rating curve.

## NORTH FORK OF KAWEAH RIVER NEAR KAWEAH, CAL.

LOCATION.—In the SE. ¼ SE. ¼ sec. 11, T. 16 S., R. 28 E., just above mouth of Cactus Creek, 2½ miles west of military outpost, and about 5¾ miles north of Kaweah.

RECORDS AVAILABLE.—July 19 to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to large rock in center of pool 100 feet above mouth of Cactus Creek.

CHANNEL.—Bowlders and solid rock. The control is a solid rock dike extending across channel 30 feet below gage.

DISCHARGE MEASUREMENTS.—Made by wading at control below gage.

COOPERATION.—Gage-height record furnished by Sequoia National Park, through Walter Fry, acting superintendent.

*Discharge measurements of North Fork of Kaweah River near Kaweah, Cal., during 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| July 19 | 6.31 | 12 |
| Oct. 15 | 6.07 | 5.9 |

*Daily gage height, in feet, and discharge, in second-feet, of North Fork of Kaweah River near Kaweah, Cal., for the year ending Sept. 30, 1913.*

| Day. | August. | | Day. | August. | | Day. | August. | |
|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | | Gage height. | Discharge. | | Gage height. | Discharge. |
| 1 | 6.30 | 12 | 11 | 6.19 | 8.6 | 21 | 6.11 | 6.8 |
| 2 | 6.30 | 12 | 12 | 6.19 | 8.6 | 22 | 6.11 | 6.8 |
| 3 | 6.30 | 12 | 13 | 6.18 | 8.4 | 23 | 6.11 | 6.8 |
| 4 | 6.30 | 12 | 14 | 6.15 | 7.7 | 24 | 6.10 | 6.6 |
| 5 | 6.26 | 10 | 15 | 6.15 | 7.7 | 25 | 6.10 | 6.6 |
| 6 | 6.25 | 10 | 16 | 6.15 | 7.7 | 26 | 6.10 | 6.6 |
| 7 | 6.24 | 9.9 | 17 | 6.15 | 7.7 | 27 | 6.10 | 6.6 |
| 8 | 6.30 | 12 | 18 | 6.12 | 7.0 | | | |
| 9 | 6.24 | 9.9 | 19 | 6.12 | 7.0 | | | |
| 10 | 6.20 | 8.8 | 20 | 6.12 | 7.0 | | | |

NOTE.—Discharge determined from a fairly well defined rating curve.

### NORTH FORK OF KAWEAH RIVER AT KAWEAH, CAL.

LOCATION.—In the SW. ¼ sec. 2, T. 17 S., R. 28 E., in Sequoia National Forest, at highway bridge, about half a mile north of Kaweah, and 2 miles above junction with Kaweah River. Sheep Creek enters 2½ miles above and Manikin Creek one-fourth mile below gage.

RECORDS AVAILABLE.—October 12, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to right abutment of bridge.

CHANNEL.—Solid rock and sand; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Approximately 20 second-feet is diverted by several small ditches for irrigation above the station.

ACCURACY.—Rating curve well defined except at high water. Results good.

*Discharge measurements of North Fork of Kaweah River at Kaweah, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Apr. 15 | H. J. Tompkins | [a] 1.58 | 101 | June 10 | E. C. Murphy | 1.42 | 78 |
| 29 | E. C. Murphy | 1.80 | 146 | | | | |

[a] Some débris on control.

*Daily gage height, in feet, North Fork of Kaweah River at Kaweah, Cal., for the year ending Sept. 30, 1913.*

[Lloyd Weckert, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.45 | 0.55 | 0.65 | 0.70 | 0.99 | 1.12 | 1.94 | 1.63 | 1.52 | 1.02 | 0.66 | 1.36 |
| 2 | .45 | .55 | .65 | .70 | .98 | 1.08 | 1.83 | 1.58 | 1.49 | .98 | .66 | .90 |
| 3 | .45 | .55 | .65 | .70 | .95 | 1.06 | 1.60 | 1.55 | 1.50 | .95 | .63 | .77 |
| 4 | .50 | .55 | .65 | .70 | .93 | 1.25 | 1.53 | 1.58 | 1.51 | .93 | .60 | .72 |
| 5 | .50 | .55 | .65 | .70 | .92 | 1.42 | 1.61 | 1.62 | 1.52 | .89 | .55 | .69 |
| 6 | .50 | .55 | .65 | .70 | .90 | 1.44 | 1.68 | 1.78 | 1.47 | .84 | .51 | .67 |
| 7 | .50 | .55 | .65 | .65 | .95 | 1.45 | 1.52 | 1.69 | 1.45 | .85 | .51 | .63 |
| 8 | .50 | .55 | .65 | .60 | 1.07 | 1.46 | 1.48 | 1.67 | 1.39 | .82 | .50 | .57 |
| 9 | .50 | .55 | .65 | .75 | 1.05 | 1.52 | 1.50 | 1.66 | 1.39 | .82 | .50 | .54 |
| 10 | .50 | .65 | .65 | .75 | 1.00 | 1.48 | 1.62 | 1.67 | 1.39 | .79 | .49 | .52 |
| 11 | .55 | .65 | .65 | .75 | .98 | 1.43 | 1.76 | 1.66 | 1.37 | .75 | .48 | .50 |
| 12 | .55 | .65 | .70 | .75 | .97 | 1.33 | 1.78 | 1.63 | 1.34 | .78 | .48 | .50 |
| 13 | .55 | .60 | .70 | .75 | .97 | 1.20 | 1.76 | 1.61 | 1.27 | .74 | .48 | .50 |
| 14 | .55 | .60 | .65 | .80 | 1.00 | 1.21 | 1.78 | 1.61 | 1.22 | .73 | .48 | .50 |
| 15 | .55 | .60 | .80 | .98 | 1.01 | 1.20 | 1.56 | 1.60 | 1.20 | .68 | .47 | .50 |
| 16 | .55 | .60 | .80 | 1.12 | 1.07 | 1.20 | 1.56 | 1.59 | 1.18 | .66 | .47 | .48 |
| 17 | .55 | .60 | .75 | 1.08 | 1.14 | 1.20 | 1.53 | 1.58 | 1.12 | .67 | .48 | .45 |
| 18 | .55 | .60 | .75 | 1.00 | 1.06 | 1.31 | 1.64 | 1.57 | 1.10 | .64 | .47 | .43 |
| 19 | .55 | .60 | .75 | .96 | 1.00 | 1.26 | 1.62 | 1.55 | 1.08 | .62 | .46 | .43 |
| 20 | .50 | .65 | .70 | .94 | 1.00 | 1.26 | 1.57 | 1.53 | 1.07 | .62 | .46 | .42 |
| 21 | .50 | .65 | .70 | .92 | .93 | 1.19 | 1.59 | 1.51 | 1.06 | .62 | .46 | .43 |
| 22 | .50 | .65 | .70 | .94 | .95 | 1.21 | 1.63 | 1.50 | 1.04 | .77 | .45 | .44 |
| 23 | .50 | .65 | .70 | .89 | .90 | 1.20 | 1.80 | 1.50 | 1.02 | .83 | .45 | .45 |
| 24 | .50 | .65 | .70 | .90 | 1.49 | 1.19 | 1.87 | 1.46 | 1.00 | .82 | .43 | .45 |
| 25 | .50 | .65 | .70 | .90 | 1.44 | 1.16 | 1.90 | 1.42 | 1.01 | .88 | .42 | .46 |
| 26 | .50 | .65 | .70 | .94 | 1.22 | 1.19 | 1.94 | 1.40 | 1.03 | .84 | .40 | .46 |
| 27 | .55 | .65 | .70 | .97 | 1.14 | 1.26 | 1.88 | 1.39 | 1.42 | .80 | .35 | .46 |
| 28 | .60 | .65 | .70 | 1.00 | 1.10 | 1.36 | 1.82 | 1.80 | 1.24 | .77 | .48 | .46 |
| 29 | .60 | .65 | .70 | .99 | ..... | 1.50 | 1.80 | 1.64 | 1.18 | .81 | .55 | .46 |
| 30 | .60 | .65 | .70 | 1.00 | ..... | 1.68 | 1.66 | 1.61 | 1.07 | .77 | .49 | .46 |
| 31 | .60 | ..... | .70 | .99 | ..... | 1.82 | ..... | 1.55 | ..... | .75 | 1.29 | ..... |

*Daily discharge, in second-feet, of North Fork of Kaweah River at Kaweah, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 5 | 9 | 11 | 28 | 39 | 190 | 113 | 92 | 31 | 9.4 | 67 |
| 2 | 2 | 5 | 9 | 11 | 28 | 35 | 160 | 103 | 86 | 28 | 9.4 | 22 |
| 3 | 2 | 5 | 9 | 11 | 26 | 34 | 107 | 98 | 88 | 26 | 8.2 | 14 |
| 4 | 3 | 5 | 9 | 11 | 24 | 53 | 94 | 103 | 90 | 24 | 7.0 | 12 |
| 5 | 3 | 5 | 9 | 11 | 23 | 76 | 109 | 111 | 92 | 21 | 5.0 | 11 |
| 6 | 3 | 5 | 9 | 11 | 22 | 79 | 124 | 147 | 84 | 18 | 3.4 | 9.8 |
| 7 | 3 | 5 | 9 | 9 | 26 | 80 | 92 | 126 | 80 | 19 | 3.4 | 8.2 |
| 8 | 3 | 5 | 9 | 7 | 35 | 82 | 85 | 122 | 72 | 17 | 3.0 | 5.8 |
| 9 | 3 | 5 | 9 | 14 | 33 | 92 | 88 | 120 | 72 | 17 | 3.0 | 4.6 |
| 10 | 3 | 9 | 9 | 14 | 29 | 85 | 111 | 122 | 72 | 16 | 2.8 | 3.8 |
| 11 | 5 | 9 | 9 | 14 | 28 | 78 | 142 | 120 | 69 | 14 | 2.6 | 3.0 |
| 12 | 5 | 9 | 11 | 14 | 27 | 63 | 147 | 113 | 65 | 15 | 2.6 | 3.0 |
| 13 | 5 | 7 | 11 | 14 | 27 | 47 | 142 | 109 | 55 | 13 | 2.6 | 3.0 |
| 14 | 5 | 7 | 9 | 16 | 29 | 48 | 147 | 109 | 49 | 12 | 2.6 | 3.0 |
| 15 | 5 | 7 | 16 | 28 | 30 | 47 | 99 | 107 | 47 | 10 | 2.4 | 3.0 |
| 16 | 5 | 7 | 16 | 39 | 35 | 47 | 99 | 105 | 45 | 9.4 | 2.4 | 2.6 |
| 17 | 5 | 7 | 14 | 35 | 41 | 47 | 94 | 103 | 39 | 9.8 | 2.6 | 2.0 |
| 18 | 5 | 7 | 14 | 29 | 34 | 60 | 115 | 101 | 37 | 8.6 | 2.4 | 1.6 |
| 19 | 5 | 7 | 14 | 26 | 29 | 54 | 111 | 98 | 35 | 7.8 | 2.2 | 1.6 |
| 20 | 3 | 9 | 11 | 25 | 29 | 54 | 101 | 94 | 35 | 7.8 | 2.2 | 1.4 |
| 21 | 3 | 9 | 11 | 23 | 24 | 46 | 105 | 90 | 34 | 7.8 | 2.2 | 1.6 |
| 22 | 3 | 9 | 11 | 25 | 26 | 48 | 113 | 88 | 32 | 14 | 2.0 | 1.8 |
| 23 | 3 | 9 | 11 | 21 | 22 | 47 | 152 | 88 | 31 | 18 | 2.0 | 2.0 |
| 24 | 3 | 9 | 11 | 22 | 86 | 46 | 170 | 82 | 29 | 17 | 1.6 | 2.0 |
| 25 | 3 | 9 | 11 | 22 | 79 | 43 | 178 | 76 | 30 | 21 | 1.4 | 2.2 |
| 26 | 3 | 9 | 11 | 25 | 49 | 46 | 190 | 73 | 31 | 18 | 1.0 | 2.2 |
| 27 | 5 | 9 | 11 | 27 | 41 | 54 | 173 | 72 | 76 | 16 | .8 | 2.2 |
| 28 | 7 | 9 | 11 | 29 | 37 | 67 | 157 | 152 | 52 | 14 | 2.6 | 2.2 |
| 29 | 7 | 9 | 11 | 28 | ..... | 88 | 152 | 115 | 45 | 17 | 5.0 | 2.2 |
| 30 | 7 | 9 | 11 | 29 | ..... | 124 | 120 | 109 | 35 | 14 | 2.8 | 2.2 |
| 31 | 7 | ..... | 11 | 28 | ..... | 157 | ..... | 98 | ..... | 14 | 58 | ..... |

NOTE.—Discharge determined from a well defined rating curve.

*Monthly discharge of North Fork of Kaweah River at Kaweah, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 7 | 2 | 4.1 | 252 | B. |
| November | 9 | 5 | 7.3 | 434 | B. |
| December | 16 | 9 | 10.8 | 664 | B. |
| January | 39 | 7 | 20.3 | 1,250 | A. |
| February | 86 | 22 | 33.8 | 1,880 | A. |
| March | 157 | 34 | 63.4 | 3,900 | A. |
| April | 190 | 85 | 129 | 7,680 | A. |
| May | 152 | 72 | 105 | 6,460 | A. |
| June | 92 | 29 | 56.6 | 3,370 | A. |
| July | 31 | 7.8 | 16.0 | 984 | A. |
| August | 58 | .8 | 5.12 | 315 | A. |
| September | 67 | 1.4 | 6.77 | 403 | A. |
| The year | 190 | .8 | 38.1 | 27,600 | |

NOTE.—Maximum recorded gage height for the year: 1.96 feet, Apr. 1 at 6 a. m.: discharge, 196 second-feet.

## SOUTH FORK OF KAWEAH RIVER NEAR THREE RIVERS, CAL.

LOCATION.—In the SE. ¼ sec. 8, T. 18 S., R. 29 E., on the Mehrton ranch, 500 feet above mouth of Cinnamon Creek, 4½ miles southeast of Three Rivers and about 5 miles above junction with Kaweah River.

RECORDS AVAILABLE.—September 18, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to large bowlder on right bank.

CHANNEL.—Gravel and bowlders; rough; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 300 feet above gage or by wading.

DIVERSIONS.—Two small ditches divert water for irrigation above the station.

ACCURACY.—Rating curve fairly well defined; results fair.

*Discharge measurements of South Fork of Kaweah River near Three Rivers, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Apr. 12 | H. J. Tompkins | 2.79 | 42 | June 9 | E. C. Murphy | 3.16 | 99 |
| 13 | do | 2.82 | 51 | July 22 | H. J. Tompkins | 2.22 | 13 |
| 30 | E. C. Murphy | 3.24 | 119 | | | | |

*Daily gage height, in feet, of South Fork of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

[D. N. Mehrten, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.82 | 2.00 | 2.06 | 2.00 | 2.10 | 2.30 | 2.92 | 3.08 | 3.6 | 2.57 | 2.11 | 3.20 |
| 2 | 1.85 | 2.00 | 2.05 | 2.00 | 2.11 | 2.30 | 2.95 | 3.00 | 3.55 | 2.55 | 2.12 | 2.20 |
| 3 | 1.87 | 2.00 | 2.05 | 2.00 | 2.12 | 2.32 | 2.77 | 2.95 | 3.45 | 2.53 | 2.13 | 2.42 |
| 4 | 1.90 | 2.00 | 2.04 | 2.00 | 2.13 | 2.34 | 2.70 | 3.12 | 3.32 | 2.50 | 2.08 | 2.30 |
| 5 | 1.93 | 2.00 | 2.03 | 1.98 | 2.13 | 2.36 | 2.67 | 3.35 | 3.30 | 2.48 | 2.00 | 2.20 |
| 6 | 1.95 | 2.00 | 2.00 | 1.97 | 2.14 | 2.38 | 2.70 | 3.6 | 3.30 | 2.45 | 2.00 | 2.17 |
| 7 | 1.95 | 2.00 | 2.00 | 1.97 | 2.16 | 2.39 | 2.68 | 3.65 | 3.25 | 2.43 | 1.97 | 2.13 |
| 8 | 1.97 | 2.02 | 2.00 | 1.96 | 2.20 | 2.43 | 2.63 | 3.6 | 3.20 | 2.40 | 1.97 | 2.10 |
| 9 | 1.97 | 2.02 | 2.00 | 2.10 | 2.20 | 2.45 | 2.60 | 3.55 | 3.15 | 2.38 | 1.96 | 2.08 |
| 10 | 1.98 | 2.12 | 2.00 | 2.17 | 2.20 | 2.50 | 2.70 | 3.6 | 3.15 | 2.32 | 1.95 | 2.05 |
| 11 | 1.97 | 2.20 | 2.00 | 2.19 | 2.20 | 2.50 | 2.75 | 3.65 | 3.15 | 2.30 | 1.95 | 2.03 |
| 12 | 1.96 | 2.08 | 2.00 | 2.17 | 2.18 | 2.50 | 2.82 | 3.6 | 3.14 | 2.25 | 1.95 | 2.01 |
| 13 | 1.94 | 2.07 | 2.00 | 2.15 | 2.18 | 2.41 | 2.90 | 3.55 | 3.10 | 2.20 | 1.95 | 2.00 |
| 14 | 1.92 | 2.07 | 2.00 | 2.10 | 2.16 | 2.37 | 2.89 | 3.45 | 3.03 | 2.18 | 1.95 | 2.00 |
| 15 | 1.90 | 2.08 | 2.10 | 2.17 | 2.16 | 2.33 | 2.82 | 3.55 | 3.01 | 2.16 | 1.95 | 2.00 |
| 16 | 1.90 | 2.08 | 2.08 | 2.30 | 2.16 | 2.31 | 2.82 | 3.65 | 3.00 | 2.14 | 1.95 | 2.00 |
| 17 | 1.90 | 2.09 | 2.05 | 2.15 | 2.15 | 2.30 | 2.83 | 3.85 | 3.00 | 2.13 | 1.95 | 1.97 |
| 18 | 1.90 | 2.09 | 2.03 | 2.13 | 2.15 | 2.33 | 2.85 | 3.8 | 2.97 | 2.12 | 1.95 | 1.95 |
| 19 | 1.90 | 2.09 | 2.02 | 2.12 | 2.15 | 2.40 | 2.82 | 3.75 | 2.95 | 2.11 | 1.95 | 1.93 |
| 20 | 1.90 | 2.10 | 2.01 | 2.10 | 2.14 | 2.40 | 2.75 | 3.65 | 2.87 | 2.10 | 1.95 | 1.90 |
| 21 | 1.90 | 2.10 | 2.00 | 2.10 | 2.16 | 2.37 | 2.76 | 3.7 | 2.75 | 2.09 | 1.95 | 1.93 |
| 22 | 1.90 | 2.09 | 2.00 | 2.10 | 2.19 | 2.40 | 2.79 | 3.7 | 2.70 | 2.08 | 1.95 | 1.92 |
| 23 | 1.90 | 2.07 | 2.00 | 2.10 | 2.16 | 2.40 | 2.85 | 3.7 | 2.68 | 2.07 | 2.00 | 1.92 |
| 24 | 1.90 | 2.05 | 2.00 | 2.08 | 2.20 | 2.45 | 2.89 | 3.7 | 2.65 | 2.07 | 2.00 | 1.91 |
| 25 | 1.90 | 2.05 | 2.00 | 2.08 | 2.25 | 2.40 | 2.95 | 3.7 | 2.65 | 2.08 | 2.00 | 1.90 |
| 26 | 1.90 | 2.06 | 2.00 | 2.07 | 2.30 | 2.35 | 3.20 | 3.65 | 2.67 | 2.09 | 2.00 | 1.90 |
| 27 | 1.90 | 2.06 | 2.00 | 2.08 | 2.35 | 2.40 | 3.35 | 3.55 | 2.80 | 2.15 | 2.00 | 1.90 |
| 28 | 2.00 | 2.07 | 2.00 | 2.09 | 2.33 | 2.45 | 3.45 | 3.65 | 2.75 | 2.25 | 2.40 | 1.90 |
| 29 | 2.00 | 2.06 | 2.00 | 2.10 | ..... | 2.56 | 3.45 | 3.45 | 2.70 | 2.35 | 2.35 | 1.90 |
| 30 | 2.00 | 2.07 | 2.00 | 2.10 | ..... | 2.58 | 3.28 | 3.5 | 2.68 | 2.50 | 2.27 | 1.90 |
| 31 | 2.00 | ..... | 2.00 | 2.10 | ..... | 2.59 | ..... | 3.55 | ..... | 2.10 | 2.50 | ..... |

*Daily discharge, in second-feet, of South Fork of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 6.6 | 8.2 | 6.6 | 9.3 | 17 | 64 | 87 | 208 | 31 | 9.6 | 108 |
| 2 | 3.8 | 6.6 | 8.0 | 6.6 | 9.6 | 17 | 68 | 74 | 194 | 30 | 10 | 13 |
| 3 | 4.0 | 6.6 | 8.0 | 6 6 | 10 | 18 | 47 | 68 | 166 | 28 | 10 | 22 |
| 4 | 4.5 | 6.6 | 7.7 | 6.6 | 10 | 18 | 41 | 94 | 134 | 26 | 8.8 | 17 |
| 5 | 5.1 | 6.6 | 7.4 | 6.2 | 10 | 19 | 39 | 141 | 129 | 25 | 6.6 | 13 |
| 6 | 5.6 | 6.6 | 6.6 | 6.0 | 11 | 20 | 41 | 208 | 129 | 24 | 6.6 | 12 |
| 7 | 5.6 | 6.6 | 6.6 | 6.0 | 11 | 21 | 39 | 224 | 118 | 22 | 6.0 | 10 |
| 8 | 6.0 | 7.1 | 6.6 | 5.8 | 13 | 22 | 35 | 208 | 108 | 21 | 6.0 | 9.3 |
| 9 | 6.0 | 7.1 | 6.6 | 9.3 | 13 | 24 | 33 | 194 | 99 | 20 | 5.8 | 8.8 |
| 10 | 6.2 | 10 | 6.6 | 12 | 13 | 26 | 41 | 208 | 99 | 18 | 5.6 | 8.0 |
| 11 | 6.0 | 13 | 6.6 | 12 | 13 | 26 | 46 | 224 | 99 | 17 | 5.6 | 7.4 |
| 12 | 5.8 | 8.8 | 6.6 | 12 | 12 | 26 | 52 | 208 | 97 | 15 | 5.6 | 6.9 |
| 13 | 5.3 | 8.5 | 6.6 | 11 | 12 | 22 | 61 | 194 | 90 | 13 | 5.6 | 6.6 |
| 14 | 4.9 | 8.5 | 6.6 | 9.3 | 11 | 20 | 60 | 166 | 79 | 12 | 5.6 | 6.6 |
| 15 | 4.5 | 8.8 | 9.3 | 12 | 11 | 18 | 52 | 194 | 76 | 11 | 5.6 | 6.6 |
| 16 | 4.5 | 8.8 | 8.8 | 17 | 11 | 17 | 52 | 224 | 74 | 11 | 5.6 | 6.6 |
| 17 | 4.5 | 9.0 | 8.0 | 11 | 11 | 17 | 53 | 290 | 74 | 10 | 5.6 | 6.0 |
| 18 | 4.5 | 9.0 | 7.4 | 10 | 11 | 18 | 56 | 272 | 70 | 10 | 5.6 | 5.6 |
| 19 | 4.5 | 9.0 | 7.1 | 10 | 11 | 21 | 52 | 256 | 68 | 9.6 | 5.6 | 5.1 |
| 20 | 4.5 | 9.3 | 6.9 | 9.3 | 11 | 21 | 46 | 224 | 58 | 9.3 | 5.6 | 4.5 |
| 21 | 4.5 | 9.3 | 6.6 | 9.3 | 11 | 20 | 46 | 239 | 46 | 9.0 | 5.6 | 5.1 |
| 22 | 4.5 | 9.0 | 6.6 | 9.3 | 12 | 21 | 49 | 239 | 41 | 8.8 | 5.6 | 4.9 |
| 23 | 4.5 | 8.5 | 6.6 | 9.3 | 11 | 21 | 56 | 239 | 39 | 8.5 | 6.6 | 4.9 |
| 24 | 4.5 | 8.0 | 6.6 | 8.8 | 13 | 24 | 60 | 239 | 37 | 8.5 | 6.6 | 4.7 |
| 25 | 4.5 | 8.0 | 6.6 | 8.8 | 15 | 21 | 68 | 239 | 37 | 8.8 | 6.6 | 4.5 |
| 26 | 4.5 | 8.2 | 6.6 | 8.5 | 17 | 19 | 108 | 224 | 39 | 9.0 | 6.6 | 4.5 |
| 27 | 4.5 | 8.2 | 6.6 | 8.8 | 19 | 21 | 141 | 194 | 50 | 11 | 6.6 | 4.5 |
| 28 | 6.6 | 8.5 | 6.6 | 9.0 | 18 | 24 | 166 | 224 | 46 | 15 | 21 | 4.5 |
| 29 | 6.6 | 8.2 | 6.6 | 9.3 | ..... | 30 | 166 | 166 | 41 | 19 | 19 | 4.5 |
| 30 | 6.6 | 8.5 | 6.6 | 9.3 | ..... | 32 | 125 | 179 | 39 | 26 | 16 | 4.5 |
| 31 | 6,6 | ..... | 6.6 | 9.3 | ..... | 32 | ..... | 194 | ..... | 9.3 | 26 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve.

*Monthly discharge of South Fork of Kaweah River near Three Rivers, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 6.6 | 3.3 | 5.06 | 311 | D |
| November | 13 | 6.6 | 8.25 | 491 | C |
| December | 9.3 | 6.6 | 7.06 | 434 | C |
| January | 17 | 5.8 | 9.19 | 565 | C |
| February | 19 | 9.3 | 12.1 | 672 | C |
| March | 32 | 17 | 21.7 | 1,330 | C |
| April | 166 | 33 | 65.4 | 3,890 | B |
| May | 290 | 68 | 198 | 12,200 | A |
| June | 208 | 37 | 86.1 | 5,120 | B |
| July | 31 | 8.5 | 16.0 | 984 | C |
| August | 26 | 5.6 | 8.30 | 510 | C |
| September | 108 | 4.5 | 11.0 | 655 | C |
| The year | 290 | 3.3 | 37.5 | 27,200 | |

## SAN JOAQUIN RIVER BASIN.

### SAN JOAQUIN RIVER AND TRIBUTARIES ABOVE KINGS RIVER.

#### SAN JOAQUIN RIVER NEAR SHAVER, CAL.

LOCATION.—In the N. ½ sec. 27, T. 8 S., R. 24 E., about 500 feet above junction with Big Creek and 5 miles northwest of Shaver.

RECORDS AVAILABLE.—August 11, 1912, to September 30, 1913.

DRAINAGE AREA.—785 square miles.

GAGE.—Storrow 7-day water-stage recorder on left bank.

CHANNEL.—Rough broken rock; not likely to change.

DISCHARGE MEASUREMENTS.—Made from cable near gage.

ACCURACY.—Rating curve well defined; results considered good.

COOPERATION.—Complete record furnished by Pacific Light & Power Corporation, through R. C. Starr, hydraulic engineer.

*Daily discharge, in second-feet, of San Joaquin River near Shaver, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | |
| 1 | ..... | 335 | 11 | 635 | 305 | 21 | 462 | 211 |
| 2 | ..... | 324 | 12 | 543 | 285 | 22 | 461 | 219 |
| 3 | ..... | 327 | 13 | 645 | 281 | 23 | 440 | 219 |
| 4 | ..... | 374 | 14 | 643 | 275 | 24 | 443 | 217 |
| 5 | ..... | 391 | 15 | 605 | 273 | 25 | 438 | 226 |
| 6 | ..... | 340 | 16 | 597 | 255 | 26 | 479 | 215 |
| 7 | ..... | 329 | 17 | 567 | 241 | 27 | 497 | 214 |
| 8 | ..... | 393 | 18 | 520 | 231 | 28 | 463 | 207 |
| 9 | ..... | 394 | 19 | 480 | 215 | 29 | 425 | 205 |
| 10 | ..... | 335 | 20 | 475 | 212 | 30 | 395 | 200 |
| | | | | | | 31 | 347 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 200 | 183 | 191 | 145 | 305 | 310 | 2,080 | 1,830 | 4,150 | 2,550 | 1,260 | 2,680 |
| 2 | 218 | 191 | 182 | 143 | 304 | 263 | 2,120 | 1,790 | 4,340 | 2,620 | 1,480 | 1,820 |
| 3 | 254 | 189 | 164 | 152 | 298 | 310 | 1,330 | 1,790 | 4,040 | 2,450 | 1,400 | 1,380 |
| 4 | 285 | 197 | 164 | 156 | 294 | 362 | 1,170 | 2,270 | 3,910 | 2,540 | 1,310 | 1,160 |
| 5 | 270 | 208 | 166 | 100 | 279 | 380 | 1,280 | 3,510 | 3,720 | 2,510 | 1,230 | 1,010 |
| 6 | 271 | 210 | 128 | 125 | 267 | 447 | 1,230 | 4,430 | 4,020 | 2,670 | 1,090 | 880 |
| 7 | 268 | 225 | 106 | 120 | 272 | 462 | 1,080 | 4,980 | 4,440 | 2,680 | 965 | 824 |
| 8 | 280 | 276 | 164 | 91 | 287 | 510 | 1,010 | 3,940 | 4,750 | 2,620 | 834 | 768 |
| 9 | 270 | 235 | 153 | 159 | 288 | 535 | 1,140 | 5,010 | 4,700 | 2,500 | 974 | 712 |
| 10 | 257 | 239 | 138 | 134 | 278 | 570 | 1,500 | 4,520 | 5,030 | 2,380 | 1,240 | 649 |
| 11 | 233 | 332 | 135 | 144 | 274 | 591 | 1,840 | 4,700 | 4,830 | 2,140 | 1,080 | 604 |
| 12 | 219 | 250 | 144 | 134 | 261 | 500 | 2,190 | 4,230 | 4,500 | 1,930 | 873 | 576 |
| 13 | 218 | 265 | 160 | 150 | 260 | 458 | 1,940 | 3,480 | 4,140 | 1,740 | 796 | 568 |
| 14 | 219 | 265 | 141 | 158 | 268 | 404 | 1,680 | 3,100 | 4,370 | 1,560 | 723 | 604 |
| 15 | 204 | 265 | 193 | 224 | 289 | 370 | 1,340 | 3,600 | 4,910 | 1,380 | 666 | 576 |
| 16 | 193 | 238 | 184 | 204 | 321 | 406 | 1,140 | 4,300 | 3,980 | 1,200 | 636 | 544 |
| 17 | 190 | 232 | 151 | 185 | 371 | 391 | 1,130 | 4,540 | 3,340 | 1,090 | 604 | 506 |
| 18 | 189 | 251 | 161 | 189 | 381 | 499 | 1,120 | 5,960 | 3,320 | 1,130 | 586 | 496 |
| 19 | 184 | 224 | 166 | 206 | 320 | 505 | 1,070 | 4,390 | 2,900 | 1,140 | 570 | 443 |
| 20 | 180 | 236 | 162 | 183 | 272 | 454 | 1,260 | 4,310 | 2,760 | 1,230 | 540 | 448 |
| 21 | 171 | 219 | 151 | 199 | 279 | 446 | 1,290 | 5,470 | 2,880 | 1,580 | 535 | 443 |
| 22 | 172 | 213 | 136 | 255 | 274 | 444 | 1,640 | 5,710 | 3,130 | 1,630 | 632 | 456 |
| 23 | 168 | 207 | 139 | 230 | 246 | 468 | 2,500 | 7,120 | 2,800 | 2,300 | 826 | 443 |
| 24 | 172 | 209 | 160 | 222 | 231 | 458 | 2,500 | 6,930 | 2,810 | 2,600 | 1,050 | 420 |
| 25 | 174 | 205 | 164 | 283 | 300 | 440 | 2,980 | 6,820 | 2,560 | 2,290 | 1,580 | 382 |
| 26 | 162 | 202 | 137 | 271 | 299 | 423 | 4,260 | 6,110 | 3,050 | 2,050 | 3,220 | 360 |
| 27 | 166 | 200 | 108 | 277 | 275 | 439 | 4,270 | 7,030 | 3,080 | 1,810 | 2,750 | 340 |
| 28 | 178 | 208 | 138 | 321 | 288 | 546 | 3,380 | 6,300 | 2,820 | 1,530 | 3,370 | 323 |
| 29 | 176 | 195 | 142 | 294 | ..... | 581 | 2,760 | 4,630 | 2,490 | 2,140 | 3,480 | 290 |
| 30 | 203 | 195 | 147 | 295 | ..... | 911 | 2,430 | 3,970 | 2,510 | 1,930 | 3,450 | 288 |
| 31 | 193 | ..... | 147 | 296 | ..... | 1,400 | ..... | 3,960 | ..... | 1,460 | 3,560 | ..... |

*Monthly discharge of San Joaquin River near Shaver, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1912. | | | | |
| August 11-31 | 645 | 347 | 503 | 21,000 |
| September | 394 | 200 | 275 | 16,400 |
| 1912–13. | | | | |
| October | 285 | 162 | 211 | 13,000 |
| November | 332 | 183 | 225 | 13,400 |
| December | 193 | 106 | 152 | 9,350 |
| January | 321 | 91 | 195 | 12,000 |
| February | 381 | 231 | 289 | 16,000 |
| March | 1,400 | 263 | 493 | 30,300 |
| April | 4,270 | 1,010 | 1,890 | 112,000 |
| May | 7,120 | 1,790 | 4,540 | 279,000 |
| June | 5,030 | 2,490 | 3,680 | 219,000 |
| July | 2,680 | 1,090 | 1,980 | 122,000 |
| August | 3,560 | 535 | 1,400 | 86,100 |
| September | 2,680 | 288 | 700 | 41,700 |
| The year | 7,120 | 91 | 1,320 | 954,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

## SAN JOAQUIN RIVER NEAR NORTH FORK, CAL.

LOCATION.—In sec. 18, T. 9 S., R. 23 E., below San Joaquin Light & Power Corporation's power house, about 6 miles below mouth of North Fork Creek, and 6 miles southeast of North Fork.

RECORDS AVAILABLE.—April 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder on left bank, 1,000 feet below power house; also staff gage on right bank at cable.

CHANNEL.—Bowlders and gravel; apparently permanent.

DISCHARGE MEASUREMENTS.—Made from cable near gage.

REGULATION.—The power plant uses water from Crane Valley reservoir on North Fork of San Joaquin River. Record at this station shows the total run-off from drainage area above station.

COOPERATION.—Record of daily discharge furnished by San Joaquin Light & Power Corporation, through G. O. Newman, chief engineer.

*Daily discharge, in second-feet, of San Joaquin River, near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 239 | 239 | 246 | 198 | 367 | 372 | 1,880 | 2,360 | 4,820 | 2,360 | 1,250 | 3,320 |
| 2 | 243 | 236 | 250 | 207 | 367 | 345 | 2,960 | 1,900 | 5,060 | 2,520 | 1,480 | 1,960 |
| 3 | 268 | 232 | 225 | 211 | 376 | 358 | 1,960 | 1,760 | 5,140 | 2,180 | 1,220 | 1,500 |
| 4 | 300 | 239 | 204 | 192 | 381 | 390 | 1,490 | 2,270 | 4,590 | 2,090 | 1,110 | 1,110 |
| 5 | 300 | 253 | 218 | 177 | 350 | 415 | 1,390 | 3,580 | 4,660 | 2,090 | 1,010 | 920 |
| 6 | 296 | 253 | 192 | 147 | 345 | 465 | 1,490 | 4,980 | 5,040 | 2,100 | 850 | 810 |
| 7 | 304 | 260 | 168 | 135 | 345 | 515 | 1,310 | 5,790 | 5,380 | 2,280 | 716 | 668 |
| 8 | 304 | 331 | 162 | 147 | 345 | 525 | 1,260 | 5,700 | 5,500 | 2,250 | 631 | 615 |
| 9 | 300 | 292 | 207 | 180 | 390 | 540 | 1,220 | 5,680 | 4,820 | 2,100 | 668 | 580 |
| 10 | 296 | 314 | 201 | 183 | 367 | 585 | 1,440 | 5,680 | 4,480 | 2,030 | 770 | 538 |
| 11 | 296 | 450 | 204 | 171 | 345 | 618 | 1,840 | 5,680 | 3,760 | 1,880 | 950 | 485 |
| 12 | 272 | 322 | 207 | 198 | 327 | 630 | 2,160 | 5,290 | 3,480 | 1,740 | 810 | 460 |
| 13 | 246 | 327 | 204 | 201 | 327 | 545 | 2,220 | 4,590 | 4,220 | 1,590 | 625 | 455 |
| 14 | 268 | 336 | 218 | 214 | 336 | 505 | 2,160 | 4,040 | 3,820 | 1,480 | 550 | 485 |
| 15 | 257 | 327 | 204 | 268 | 322 | 465 | 1,850 | 4,160 | 4,590 | 1,380 | 500 | 480 |
| 16 | 239 | 300 | 235 | 475 | 354 | 435 | 1,520 | 5,070 | 4,480 | 1,140 | 440 | 440 |
| 17 | 235 | 280 | 228 | 390 | 430 | 435 | 1,450 | 6,510 | 3,960 | 970 | 420 | 415 |
| 18 | 232 | 300 | 250 | 327 | 465 | 520 | 1,420 | 6,400 | 3,600 | 900 | 460 | 400 |
| 19 | 222 | 280 | 243 | 276 | 425 | 612 | 1,400 | 6,100 | 3,200 | 940 | 450 | 390 |
| 20 | 215 | 292 | 232 | 260 | 381 | 575 | 1,300 | 5,090 | 2,560 | 870 | 425 | 385 |
| 21 | 225 | 284 | 218 | 260 | 350 | 525 | 1,460 | 5,680 | 2,480 | 1,120 | 395 | 368 |
| 22 | 232 | 268 | 180 | 300 | 345 | 500 | 1,700 | 7,250 | 2,960 | 1,480 | 420 | 363 |
| 23 | 232 | 272 | 180 | 313 | 336 | 550 | 2,300 | 8,560 | 2,860 | 1,810 | 890 | 368 |
| 24 | 225 | 253 | 239 | 318 | 336 | 535 | 2,960 | 8,170 | 2,660 | 2,860 | 830 | 363 |
| 25 | 225 | 260 | 214 | 304 | 465 | 525 | 3,540 | 8,350 | 2,500 | 2,130 | 1,050 | 341 |
| 26 | 218 | 250 | 198 | 309 | 440 | 510 | 4,370 | 8,310 | 2,270 | 1,960 | 2,000 | 918 |
| 27 | 218 | 253 | 198 | 322 | 425 | 515 | 5,020 | 7,960 | 3,360 | 1,650 | 3,320 | 296 |
| 28 | 200 | 236 | 201 | 340 | 386 | 540 | 4,430 | 8,380 | 3,080 | 1,500 | 2,960 | 284 |
| 29 | 239 | 381 | 183 | 372 | ..... | 612 | 3,760 | 6,510 | 2,700 | 1,500 | 3,040 | 272 |
| 30 | 239 | 304 | 214 | 372 | ..... | 631 | 3,140 | 5,790 | 2,460 | 1,820 | 3,400 | 260 |
| 31 | 272 | ..... | 225 | 376 | ..... | 1,360 | ..... | 5,290 | ..... | 1,610 | 4,540 | ..... |

*Monthly discharge of San Joaquin River near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 304 | 200 | 253 | 15,600 |
| November | 450 | 232 | 287 | 17,100 |
| December | 250 | 162 | 211 | 13,000 |
| January | 475 | 135 | 263 | 16,200 |
| February | 465 | 322 | 372 | 20,700 |
| March | 1,360 | 345 | 537 | 33,000 |
| April | 5,020 | 1,220 | 2,210 | 132,000 |
| May | 8,560 | 1,760 | 5,580 | 343,000 |
| June | 5,500 | 2,270 | 3,820 | 227,000 |
| July | 2,860 | 870 | 1,750 | 108,000 |
| August | 4,540 | 395 | 1,230 | 75,600 |
| September | 3,320 | 260 | 675 | 40,200 |
| The year | 8,560 | 135 | 1,440 | 1,040,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

## SAN JOAQUIN RIVER NEAR FRIANT, CAL.

LOCATION.—In the SE. ¼ sec. 34, T. 10 S., R. 21 E., at Fort Miller ranch, about 4 miles above Friant.

RECORDS AVAILABLE.—October 18, 1907, to September 30, 1913.

DRAINAGE AREA.—1,640 square miles.

GAGE.—Staff in three sections on left bank.

CHANNEL.—Sand and gravel; shifts slightly.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet below inclined section of gage or by wading.

DIVERSION AND STORAGE.—Some storage and power developed above the station. The Fresno Flume & Irrigation Co. diverts about 10 second-feet from Stevenson Creek. This water is used for irrigation near Clovis.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of San Joaquin River near Friant, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 13 | R. C. Rice | 3.38 | 277 | May 1 | E. C. Murphy | 5.12 | 1,880 |
| Mar. 6 | E. C. Murphy | 3.78 | 505 | June 12 | do | 5.42 | 2,330 |

*Daily gage height, in feet, of San Joaquin River near Friant, Cal., for the year ending Sept. 30, 1913.*

[E. G. Davis, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.4 | 3.4 | 3.6 | 3.45 | 3.65 | 3.65 | 3.4 | 5.2 | 6.1 | 5.1 | 4.5 | 5.4 |
| 2 | 3.4 | 3.4 | 3.45 | 3.4 | 3.65 | 3.65 | 3.6 | 4.9 | 6.4 | 5.2 | 4.6 | 5.0 |
| 3 | 3.5 | 3.4 | 3.45 | 3.4 | 3.65 | 3.65 | 4.8 | 4.7 | 6.4 | 5.2 | 4.6 | 4.6 |
| 4 | 3.5 | 3.4 | 3.5 | 3.4 | 3.65 | 3.65 | 4.6 | 4.9 | 6.1 | 5.2 | 4.45 | 4.5 |
| 5 | 3.4 | 3.4 | 3.45 | 3.35 | 3.6 | 3.65 | 4.4 | 5.5 | 6.1 | 5.2 | 4.35 | 4.25 |
| 6 | 3.4 | 3.35 | 3.45 | 3.35 | 3.55 | 3.8 | 4.6 | 5.9 | 6.1 | 5.2 | 4.25 | 4.15 |
| 7 | 3.4 | 3.35 | 3.45 | 3.2 | 3.55 | 3.8 | 4.45 | 6.7 | 6.4 | 5.5 | 4.15 | 4.05 |
| 8 | 3.3 | 3.4 | 3.45 | 3.25 | 3.6 | 3.9 | 4.35 | 6.8 | 6.2 | 5.2 | 4.0 | 3.95 |
| 9 | 3.3 | 3.4 | 3.45 | 3.25 | 3.7 | 3.9 | 4.4 | 6.4 | 6.2 | 5.2 | 4.15 | 3.9 |
| 10 | 3.3 | 3.4 | 3.45 | 3.45 | 3.7 | 3.9 | 4.5 | 6.6 | 6.8 | 5.0 | 4.3 | 3.9 |
| 11 | 3.4 | 3.7 | 3.45 | 3.4 | 3.65 | 3.95 | 4.8 | 6.4 | 6.0 | 5.0 | 4.2 | 3.8 |
| 12 | 3.6 | 3.6 | 3.45 | 3.35 | 3.6 | 4.0 | 5.0 | 6.4 | 5.8 | 5.0 | 4.1 | 3.8 |
| 13 | 3.35 | 3.6 | 3.45 | 3.4 | 3.6 | 3.85 | 5.0 | 6.2 | 5.8 | 4.9 | 4.0 | 3.8 |
| 14 | 3.35 | 3.6 | 3.45 | 3.4 | 3.6 | 3.85 | 5.0 | 6.0 | 6.1 | 4.8 | 3.9 | 3.8 |
| 15 | 3.4 | 3.6 | 3.5 | 3.45 | 3.6 | 3.85 | 4.8 | 6.0 | 6.0 | 4.6 | 3.9 | 3.8 |
| 16 | 3.4 | 3.6 | 3.5 | 3.9 | 3.6 | 3.85 | 4.5 | 6.2 | 5.9 | 4.5 | 3.85 | 3.8 |
| 17 | 3.4 | 3.6 | 3.5 | 3.8 | 3.65 | 3.8 | 4.5 | 6.5 | 5.8 | 4.35 | 3.8 | 3.8 |
| 18 | 3.4 | 3.5 | 3.45 | 3.7 | 3.65 | 3.8 | 4.5 | 7.0 | 5.7 | 4.2 | 3.8 | 3.8 |
| 19 | 3.4 | 3.5 | 3.45 | 3.6 | 3.7 | 4.0 | 4.5 | 7.1 | 5.7 | 4.3 | 3.75 | 4.0 |
| 20 | 3.37 | 3.5 | 3.45 | 3.5 | 3.7 | 3.9 | 4.4 | 6.6 | 5.6 | 4.4 | 3.7 | 3.8 |
| 21 | 3.4 | 3.45 | 3.45 | 3.5 | 3.65 | 3.85 | 4.6 | 7.0 | 5.3 | 4.5 | 3.65 | 3.8 |
| 23 | 3.4 | 3.45 | 3.45 | 3.5 | 3.65 | 3.8 | 4.7 | 7.0 | 5.5 | 4.6 | 3.7 | 3.75 |
| 23 | 3.35 | 3.45 | 3.45 | 3.5 | 3.65 | 3.9 | 4.9 | 7.6 | 5.8 | 5.5 | 3.75 | 3.7 |
| 24 | 3.4 | 3.45 | 3.45 | 3.6 | 3.65 | 3.85 | 5.3 | 8.2 | 5.4 | 5.5 | 3.9 | 3.65 |
| 25 | 3.4 | 3.4 | 3.45 | 3.6 | 3.9 | 3.85 | 5.5 | 8.2 | 5.4 | 5.0 | 4.25 | 3.6 |
| 26 | 3.4 | 3.4 | 3.45 | 3.6 | 3.75 | 3.8 | 5.9 | 8.2 | 5.6 | 5.0 | 5.7 | 3.6 |
| 27 | 3.4 | 3.45 | 3.5 | 3.6 | 3.75 | 3.8 | 5.9 | 7.7 | 5.6 | 4.8 | 5.5 | 3.55 |
| 28 | 3.4 | 3.45 | 3.45 | 3.6 | 3.7 | 3.85 | 6.3 | 8.2 | 6.0 | 4.8 | 5.2 | 3.5 |
| 29 | 3.4 | 3.45 | 3.45 | 3.65 | ..... | 4.0 | 6.0 | 7.4 | 5.2 | 4.6 | 5.7 | 3.45 |
| 30 | 3.35 | 3.7 | 3.4 | 3.65 | ..... | 4.0 | 5.5 | 7.0 | 5.1 | 5.0 | 5.2 | 3.45 |
| 31 | 3.35 | ..... | 3.4 | 3.65 | ..... | 4.4 | ..... | 6.5 | ..... | 4.8 | 6.4 | ..... |

*Daily discharge, in second-feet, of San Joaquin River near Friant, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 290 | 290 | 420 | 320 | 458 | 458 | 290 | 1,980 | 3,160 | 1,860 | 1,200 | 2,240 |
| 2 | 290 | 290 | 320 | 290 | 458 | 458 | 420 | 1,640 | 3,580 | 1,980 | 1,310 | 1,750 |
| 3 | 350 | 290 | 320 | 290 | 458 | 458 | 1,530 | 1,420 | 3,580 | 1,980 | 1,310 | 1,310 |
| 4 | 350 | 290 | 350 | 290 | 458 | 458 | 1,320 | 1,640 | 3,160 | 1,980 | 1,150 | 1,200 |
| 5 | 290 | 290 | 320 | 268 | 420 | 458 | 1,120 | 2,360 | 3,160 | 1,980 | 1,050 | 950 |
| 6 | 290 | 268 | 320 | 268 | 385 | 575 | 1,320 | 2,880 | 3,160 | 1,980 | 950 | 850 |
| 7 | 290 | 268 | 320 | 200 | 385 | 575 | 1,170 | 4,030 | 3,580 | 2,360 | 850 | 755 |
| 8 | 245 | 290 | 320 | 222 | 420 | 655 | 1,070 | 4,190 | 3,300 | 1,980 | 710 | 665 |
| 9 | 245 | 290 | 320 | 222 | 495 | 655 | 1,120 | 3,580 | 3,300 | 1,980 | 850 | 620 |
| 10 | 245 | 290 | 320 | 320 | 495 | 655 | 1,220 | 3,880 | 4,190 | 1,750 | 1,000 | 620 |
| 11 | 290 | 495 | 320 | 290 | 458 | 698 | 1,530 | 3,580 | 3,020 | 1,750 | 900 | 540 |
| 12 | 420 | 420 | 320 | 268 | 420 | 740 | 1,750 | 3,580 | 2,750 | 1,750 | 800 | 540 |
| 13 | 268 | 420 | 320 | 290 | 420 | 615 | 1,750 | 3,300 | 2,750 | 1,640 | 710 | 540 |
| 14 | 268 | 420 | 320 | 290 | 420 | 615 | 1,750 | 3,020 | 3,160 | 1,530 | 620 | 540 |
| 15 | 290 | 420 | 350 | 320 | 420 | 615 | 1,530 | 3,020 | 3,020 | 1,310 | 620 | 540 |
| 16 | 290 | 420 | 350 | 655 | 420 | 615 | 1,220 | 3,300 | 2,880 | 1,200 | 580 | 540 |
| 17 | 290 | 420 | 350 | 575 | 458 | 575 | 1,220 | 3,730 | 2,750 | 1,050 | 540 | 540 |
| 18 | 290 | 350 | 320 | 495 | 458 | 575 | 1,220 | 4,510 | 2,620 | 900 | 540 | 540 |
| 19 | 290 | 350 | 320 | 420 | 495 | 740 | 1,220 | 4,670 | 2,620 | 1,000 | 500 | 710 |
| 20 | 276 | 350 | 320 | 350 | 495 | 655 | 1,120 | 3,880 | 2,490 | 1,100 | 460 | 540 |
| 21 | 290 | 320 | 320 | 350 | 458 | 615 | 1,320 | 4,510 | 2,110 | 1,200 | 425 | 540 |
| 22 | 290 | 320 | 320 | 350 | 458 | 575 | 1,420 | 4,510 | 2,360 | 1,310 | 460 | 500 |
| 23 | 268 | 320 | 320 | 350 | 458 | 655 | 1,640 | 5,520 | 2,750 | 2,360 | 500 | 460 |
| 24 | 290 | 320 | 320 | 420 | 458 | 615 | 2,110 | 6,610 | 2,240 | 2,360 | 620 | 425 |
| 25 | 290 | 290 | 320 | 420 | 655 | 615 | 2,360 | 6,610 | 2,240 | 1,750 | 950 | 390 |
| 26 | 290 | 290 | 320 | 420 | 535 | 575 | 2,880 | 6,610 | 2,490 | 1,750 | 2,620 | 390 |
| 27 | 290 | 320 | 350 | 420 | 535 | 575 | 2,880 | 5,700 | 2,490 | 1,530 | 2,360 | 355 |
| 28 | 290 | 320 | 320 | 420 | 495 | 615 | 3,440 | 6,610 | 2,020 | 1,530 | 1,980 | 320 |
| 29 | 290 | 320 | 320 | 458 | ..... | 740 | 3,020 | 5,170 | 1,980 | 1,310 | 2,620 | 288 |
| 30 | 268 | 495 | 290 | 458 | ..... | 740 | 2,360 | 4,510 | 1,860 | 1,750 | 1,980 | 288 |
| 31 | 268 | ..... | 290 | 458 | ..... | 1,120 | ..... | 3,730 | ..... | 1,530 | 3,580 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of San Joaquin River near Friant, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 1,640 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 420 | 245 | 290 | 0.177 | 0.20 | 17,800 | B. |
| November | 495 | 268 | 341 | .208 | .23 | 20,300 | B. |
| December | 420 | 290 | 326 | .199 | .23 | 20,000 | B. |
| January | 655 | 200 | 360 | .220 | .25 | 22,100 | B. |
| February | 655 | 385 | 462 | .282 | .29 | 25,700 | B. |
| March | 1,120 | 458 | 622 | .379 | .44 | 38,200 | B. |
| April | 3,440 | 290 | 1,610 | .982 | 1.10 | 95,800 | B. |
| May | 6,610 | 1,420 | 4,010 | 2.45 | 2.82 | 247,000 | A. |
| June | 4,190 | 1,860 | 2,860 | 1.74 | 1.94 | 170,000 | A. |
| July | 2,360 | 900 | 1,660 | 1.01 | 1.16 | 102,000 | B. |
| August | 3,580 | 425 | 1,120 | .683 | .79 | 68,900 | B. |
| September | 2,240 | 288 | 683 | .416 | .46 | 40,600 | B. |
| The year | 6,610 | 200 | 1,200 | .732 | 9.91 | 868,000 | |

## SAN JOAQUIN RIVER NEAR NEWMAN, CAL.

LOCATION.—In the SW. ¼ sec. 3, T. 7 S., R. 9 E., at drawbridge on Hill's Ferry road, 300 feet below mouth of Merced River and 3½ miles northeast of Newman.

RECORDS AVAILABLE.—April 29, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to downstream support of draw span.

CHANNEL.—Sand; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ARTIFICIAL CONTROL.—Water is stored and extensively used for power and irrigation on main river and tributaries above station. Record shows return water from irrigation and amount available for use along the lower river.

ACCURACY.—Rating curves fairly well defined; results good.

*Discharge measurements of San Joaquin River near Newman, Cal., during the year ending Sept. 30, 1913.*

| Date | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 10 | R. C. Rice | 0.45 | 56 | June 17 | E. C. Murphy | 4.93 | 1,420 |
| Feb. 14 | E. C. Murphy | 1.79 | 297 | Aug. 16 | Lasley Lee | 1.43 | 104 |
| May 15 | do | 5.73 | 2,120 | | | | |

*Daily gage height, in feet, of San Joaquin River near Newman, Cal., for the year ending Sept. 30, 1913.*

[Rasmus Lorensen, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.48 | 0.45 | 1.05 | 1.1 | 1.75 | 1.75 | 1.45 | 4.9 | 8.3 | 3.4 | 1.8 | 1.35 |
| 2 | .45 | .45 | 1.0 | 1.1 | 1.7 | 1.7 | 1.75 | 4.7 | 7.9 | 3.3 | 1.9 | 2.9 |
| 3 | .45 | .45 | 1.0 | 1.5 | 1.7 | 1.75 | 2.3 | 4.2 | 7.4 | 3.2 | 1.8 | 2.45 |
| 4 | .42 | .45 | 1.0 | 1.75 | 1.75 | 1.8 | 2.1 | 4.0 | 7.1 | 3.1 | 1.7 | 2.0 |
| 5 | .42 | .45 | 1.0 | 1.0 | 1.8 | 1.7 | 2.05 | 3.5 | 6.8 | 3.0 | 1.65 | 1.8 |
| 6 | .42 | .45 | 1.1 | .95 | 1.8 | 1.6 | 1.9 | 3.6 | 6.6 | 2.9 | 1.65 | 1.7 |
| 7 | .42 | .45 | 1.1 | .95 | 1.8 | 1.6 | 1.8 | 4.5 | 6.9 | 2.8 | 1.6 | 1.7 |
| 8 | .42 | .48 | 1.1 | .98 | 1.75 | 1.6 | 1.75 | 5.4 | 6.8 | 2.7 | 1.6 | 1.65 |
| 9 | .45 | .48 | 1.1 | 1.0 | 1.8 | 1.6 | 1.65 | 5.3 | 6.3 | 2.6 | 1.5 | 1.55 |
| 10 | .45 | .50 | 1.05 | 1.0 | 1.8 | 1.6 | 1.6 | 5.8 | 6.0 | 2.6 | 1.5 | 1.4 |
| 11 | .45 | .50 | 1.05 | 1.1 | 1.8 | 1.6 | 1.6 | 6.5 | 6.0 | 2.5 | 1.5 | 1.4 |
| 12 | .45 | .50 | 1.05 | 1.1 | 1.8 | 1.5 | 1.55 | 6.8 | 6.0 | 2.5 | 1.5 | 1.4 |
| 13 | .45 | .58 | 1.0 | 1.1 | 1.8 | 1.45 | 1.6 | 6.5 | 5.8 | 2.45 | 1.5 | 1.4 |
| 14 | .45 | .80 | 1.0 | 1.2 | 1.8 | 1.5 | 1.8 | 6.3 | 5.6 | 2.4 | 1.5 | 1.4 |
| 15 | .45 | .80 | 1.0 | 1.3 | 1.8 | 1.5 | 2.0 | 5.7 | 5.3 | 2.35 | 1.45 | 1.3 |
| 16 | .42 | .80 | 1.0 | 1.4 | 1.8 | 1.5 | 2.2 | 5.6 | 5.1 | 2.3 | 1.4 | 1.3 |
| 17 | .42 | .85 | 1.0 | 1.6 | 1.8 | 1.5 | 2.2 | 5.2 | 4.9 | 2.25 | 1.4 | 1.3 |
| 18 | .42 | .90 | 1.0 | 2.7 | 1.75 | 1.5 | 2.4 | 6.4 | 4.8 | 2.2 | 1.4 | 1.3 |
| 19 | .42 | .90 | 1.0 | 2.3 | 1.7 | 1.5 | 2.3 | 6.8 | 4.6 | 2.15 | 1.4 | 1.3 |
| 20 | .42 | .90 | 1.05 | 2.3 | 1.7 | 1.5 | 2.1 | 7.2 | 4.6 | 2.1 | 1.4 | 1.25 |
| 21 | .40 | .90 | 1.1 | 2.4 | 1.75 | 1.5 | 2.1 | 7.0 | 4.6 | 2.05 | 1.4 | 1.2 |
| 22 | .40 | .95 | 1.1 | 2.25 | 1.7 | 1.5 | 2.05 | 7.2 | 4.4 | 2.0 | 1.4 | 1.2 |
| 23 | .40 | .98 | 1.1 | 2.1 | 1.7 | 1.5 | 2.0 | 7.4 | 4.3 | 2.0 | 1.35 | 1.2 |
| 24 | .42 | 1.0 | 1.1 | 2.5 | 1.7 | 1.45 | 2.0 | 7.6 | 4.0 | 2.0 | 1.3 | 1.2 |
| 25 | .45 | 1.0 | 1.0 | 2.0 | 1.65 | 1.6 | 2.5 | 7.9 | 3.8 | 1.95 | 1.3 | 1.2 |
| 26 | .45 | 1.0 | 1.0 | 2.0 | 1.6 | 1.6 | 2.9 | 8.0 | 3.7 | 1.9 | 1.25 | 1.2 |
| 27 | .45 | 1.05 | 1.0 | 1.9 | 1.7 | 1.55 | 3.7 | 8.1 | 3.7 | 1.9 | 1.2 | 1.15 |
| 28 | .45 | 1.05 | 1.1 | 1.85 | 1.75 | 1.5 | 4.5 | 8.4 | 3.6 | 1.95 | 1.2 | 1.15 |
| 29 | .48 | 1.1 | 1.1 | 1.9 | ..... | 1.45 | 4.3 | 8.6 | 3.6 | 2.0 | 1.2 | 1.15 |
| 30 | .48 | 1.1 | 1.1 | 1.8 | ..... | 1.4 | 4.2 | 8.8 | 3.6 | 2.0 | 1.2 | 1.15 |
| 31 | .45 | ..... | 1.1 | 1.8 | ..... | 1.4 | ..... | 8.5 | ..... | 1.85 | 1.2 | ..... |

*Daily discharge, in second-feet, of San Joaquin River near Newman, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 58 | 56 | 137 | 146 | 278 | 278 | 210 | 1,610 | 4,070 | 650 | 174 | 93 |
| 2 | 56 | 56 | 128 | 146 | 266 | 266 | 278 | 1,500 | 3,670 | 610 | 196 | 470 |
| 3 | 56 | 56 | 128 | 220 | 266 | 278 | 430 | 1,220 | 3,220 | 575 | 174 | 332 |
| 4 | 54 | 56 | 128 | 278 | 278 | 290 | 370 | 1,120 | 2,950 | 540 | 154 | 218 |
| 5 | 54 | 56 | 128 | 128 | 290 | 266 | 355 | 880 | 2,680 | 505 | 144 | 174 |
| 6 | 54 | 56 | 146 | 120 | 290 | 242 | 315 | 925 | 2,520 | 470 | 144 | 154 |
| 7 | 54 | 56 | 146 | 120 | 290 | 242 | 290 | 1,380 | 2,770 | 438 | 134 | 154 |
| 8 | 54 | 58 | 146 | 125 | 278 | 242 | 278 | 1,910 | 2,680 | 406 | 134 | 144 |
| 9 | 56 | 58 | 146 | 128 | 290 | 242 | 254 | 1,850 | 2,280 | 374 | 116 | 12[illegible] |
| 10 | 56 | 60 | 137 | 128 | 290 | 242 | 242 | 2,160 | 2,070 | 374 | 116 | 100 |
| 11 | 56 | 60 | 137 | 146 | 290 | 242 | 242 | 2,620 | 2,070 | 346 | 116 | 100 |
| 12 | 56 | 60 | 137 | 146 | 290 | 220 | 231 | 2,820 | 2,070 | 346 | 116 | 100 |
| 13 | 56 | 68 | 128 | 146 | 290 | 210 | 242 | 2,620 | 1,940 | 332 | 116 | 100 |
| 14 | 56 | 96 | 128 | 164 | 290 | 220 | 290 | 2,490 | 1,810 | 318 | 116 | 100 |
| 15 | 56 | 96 | 128 | 182 | 290 | 220 | 340 | 2,100 | 1,630 | 305 | 108 | 86 |
| 16 | 54 | 96 | 128 | 200 | 290 | 220 | 400 | 2,040 | 1,510 | 292 | 100 | 86 |
| 17 | 54 | 104 | 128 | 242 | 290 | 220 | 400 | 1,790 | 1,400 | 279 | 100 | 86 |
| 18 | 54 | 112 | 128 | 560 | 278 | 220 | 460 | 2,560 | 1,340 | 266 | 100 | 86 |
| 19 | 54 | 112 | 128 | 430 | 266 | 220 | 430 | 2,820 | 1,240 | 254 | 100 | 86 |
| 20 | 54 | 112 | 137 | 430 | 266 | 220 | 370 | 3,100 | 1,240 | 242 | 100 | 79 |
| 21 | 52 | 112 | 146 | 460 | 278 | 220 | 370 | 2,960 | 1,240 | 230 | 100 | 72 |
| 22 | 52 | 120 | 146 | 415 | 266 | 220 | 355 | 3,100 | 1,120 | 218 | 100 | 72 |
| 23 | 52 | 125 | 146 | 370 | 266 | 220 | 340 | 3,240 | 1,070 | 218 | 93 | 72 |
| 24 | 54 | 128 | 146 | 490 | 266 | 210 | 340 | 3,380 | 920 | 218 | 86 | 72 |
| 25 | 56 | 128 | 128 | 340 | 254 | 242 | 490 | 3,600 | 825 | 207 | 86 | 72 |
| 26 | 56 | 128 | 128 | 340 | 242 | 242 | 630 | 3,680 | 780 | 196 | 79 | 72 |
| 27 | 56 | 137 | 128 | 315 | 266 | 231 | 970 | 3,760 | 780 | 196 | 72 | 66 |
| 28 | 56 | 137 | 146 | 302 | 278 | 220 | 1,380 | 3,980 | 735 | 207 | 72 | 66 |
| 29 | 58 | 146 | 146 | 315 | ..... | 210 | 1,280 | 4,130 | 735 | 218 | 72 | 66 |
| 30 | 58 | 146 | 146 | 290 | ..... | 200 | 1,220 | 4,280 | 735 | 218 | 72 | 66 |
| 31 | 56 | ..... | 146 | 290 | ..... | 200 | ..... | 4,270 | ..... | 185 | 72 | ..... |

NOTE.—Discharge determined from two fairly well defined rating curves applicable Oct. 1, 1912, to May 30, 1913, and May 31 to Sept. 30, 1913.

*Monthly discharge of San Joaquin River near Newman, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 58 | 52 | 55.1 | 3,390 | C. |
| November | 146 | 56 | 93.0 | 5,530 | B. |
| December | 146 | 128 | 136 | 8,360 | B. |
| January | 560 | 120 | 262 | 16,100 | B. |
| February | 290 | 242 | 278 | 15,400 | B. |
| March | 290 | 200 | 233 | 14,300 | B. |
| | | | 460 | | |
| April | 1,380 | 210 | | 27,400 | A. |
| May | 4,280 | 880 | 2,580 | 159,000 | B. |
| June | 4,070 | 735 | 1,800 | 107,000 | B. |
| | | | 330 | | |
| July | 650 | 185 | | 20,300 | A. |
| August | 196 | 72 | 112 | 6,890 | A. |
| September | 470 | 66 | 119 | 7,080 | A. |
| The year | 4,280 | 52 | 539 | 391,000 | |

## BIG CREEK NEAR SHAVER, CAL.

LOCATION.—In the NE. ¼ sec. 28, T. 8 S., R. 25 E., about one-fourth mile below Pitman Creek, 5½ miles above junction with San Joaquin River, and 5½ miles northeast of Shaver.

RECORDS AVAILABLE.—January 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder on right bank in pool above weir. Staff gage used from December 22, 1912.

DISCHARGE.—Computed from gage heights giving head on 10-foot concrete weir. The crest is a seven-eighths inch angle bolted to the concrete. Formula used: $Q=3.66\ L\ (h-H)^{\frac{3}{2}}$

ACCURACY.—Equipment installed carefully; results good.

COOPERATION.—Estimates of daily discharge furnished by Pacific Light & Power Corporation, through H. A. Barre, chief engineer.

*Daily discharge, in second-feet, of Big Creek near Shaver, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 9 | 9 | 7.7 | 10 | 9.9 | ..... | 175 | 381 | 69 | 25 | 57 |
| 2 | 11 | 9 | 9 | 8.8 | 7.7 | 11 | ..... | 170 | 256 | 68 | 31 | 31 |
| 3 | 11 | 9 | 6 | 9.9 | 6.6 | 13 | ..... | 202 | 304 | 54 | 20 | 26 |
| 4 | 11 | 9 | 6 | 8.8 | 6.6 | 14 | ..... | 210 | 358 | 49 | 15 | 26 |
| 5 | 11 | 9 | 9 | 6.6 | 6.6 | 14 | ..... | 284 | 318 | 44 | 10 | 15 |
| 6 | 11 | 9 | 11 | 5.5 | 6.6 | 14 | ..... | 346 | 275 | 44 | 15 | 21 |
| 7 | 11 | 9 | 11 | 6.6 | 6.6 | 22 | ..... | 446 | 332 | 39 | 10 | 15 |
| 8 | 11 | 11 | 20 | 6.6 | 5.5 | 25 | ..... | 434 | 232 | 35 | 10 | 15 |
| 9 | 11 | 11 | 41 | 6.6 | 6.6 | 29 | ..... | 441 | 233 | 35 | 15 | 7 |
| 10 | 12 | 11 | 37 | 6.6 | 7.7 | 32 | ..... | 464 | 282 | 29 | 16 | 5 |
| 11 | 14 | 11 | 33 | 7.7 | 7.8 | 30 | ..... | 476 | 188 | 25 | 15 | 5 |
| 12 | 12 | 24 | 27 | 9.9 | 9.9 | 31 | 70 | 430 | 166 | 15 | 10 | 18 |
| 13 | 12 | 27 | 24 | 11 | 11 | 25 | 50 | 397 | 175 | 25 | 8 | 20 |
| 14 | 12 | 24 | 24 | 9.9 | 11 | 26 | 70 | 310 | 157 | 20 | 5 | 7 |
| 15 | 12 | 22 | 12 | 8.8 | 12 | 27 | 72 | 429 | .97 | 20 | 5 | 8 |
| 16 | 12 | 26 | 9 | 7.7 | 13 | 28 | 45 | 419 | 121 | 10 | 7 | 8 |
| 17 | 12 | 24 | 11 | 8.8 | 9.9 | 34 | 49 | 562 | 97 | 15 | 5 | 2 |
| 18 | 12 | 24 | 12 | 7.7 | 7.7 | 30 | 55 | 553 | 106 | 20 | 6 | 5 |
| 19 | 11 | 24 | 12 | 7.7 | 6.6 | 32 | 55 | 381 | 92 | 20 | 5 | 3 |
| 20 | 11 | 26 | 12 | 7.7 | 5.5 | 31 | 96 | 423 | 83 | 21 | 2 | 6 |
| 21 | 11 | 26 | 12 | 8.8 | 5.5 | 23 | 63 | 502 | 73 | 34 | 7 | 9 |
| 22 | 11 | 22 | 7.7 | 7.7 | 4.4 | 24 | 128 | 482 | 83 | 60 | 16 | 8 |
| 23 | 11 | 22 | 7.9 | 7.7 | 5.5 | 25 | 141 | 533 | 68 | 45 | 31 | 5 |
| 24 | 11 | 18 | 8.0 | 8.8 | 6.6 | 25 | 196 | 446 | 68 | 45 | 52 | 1 |
| 25 | 11 | 14 | 7.7 | 9.9 | 5.5 | 25 | 188 | 419 | 97 | 29 | 52 | 1 |
| 26 | 11 | 8 | 8.0 | 11 | 6.6 | 22 | 275 | 387 | 88 | 61 | 36 | 1 |
| 27 | 11 | 14 | 8.2 | 12 | 7.7 | 22 | 269 | 313 | 107 | 41 | 42 | 1 |
| 28 | 11 | 9 | 7.9 | 12 | 8.8 | 25 | 254 | 435 | 141 | 66 | 68 | 2 |
| 29 | 11 | 9 | 7.7 | 12 | ..... | 26 | 218 | 402 | 117 | 72 | 42 | 2 |
| 30 | 11 | 9 | 7.7 | 11 | ..... | 38 | 259 | 448 | 97 | 46 | 198 | 2 |
| 31 | 9 | ..... | 7.7 | 11 | ..... | 39 | ..... | 378 | ..... | 26 | 131 | ..... |

NOTE.—No record Apr. 1–11.

*Monthly discharge of Big Creek near Shaver, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 14 | 9 | 11.3 | 695 |
| November | 27 | 8 | 16.0 | 952 |
| December | 41 | 6 | 13.7 | 842 |
| January | 12 | 5.5 | 8.79 | 540 |
| February | 13 | 4.4 | 7.70 | 428 |
| March | 39 | 9.9 | 24.9 | 1,530 |
| April 12–30 | 275 | 45 | 134 | 5,050 |
| May | 562 | 170 | 397 | 24,400 |
| June | 381 | 68 | 173 | 10,300 |
| July | 72 | 10 | 38.1 | 2,340 |
| August | 198 | 2 | 29.4 | 1,810 |
| September | 57 | 1 | 11.1 | 660 |

NOTE.—Monthly discharge computed by engineers of the U. S. Geological Survey.

## PITMAN CREEK NEAR SHAVER, CAL.

LOCATION.—In the E. ½ sec. 28, T. 8 S., R. 25 E., just above junction with Big Creek, about 5½ miles northeast of Shaver.

RECORDS AVAILABLE.—January 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder on right bank in pool above weir. Staff gage used from December 22, 1912.

DISCHARGE.—Computed from gage heights giving head on 38-foot masonry weir. The crest is a three-eighths inch angle bolted to the masonry. Formula used: $Q=3.66\ L\ (h-H)^{\frac{3}{2}}$

ACCURACY.—Equipment installed carefully; results good.

COOPERATION.—Estimates of daily discharge furnished by the Pacific Light & Power Corporation, through H. A. Barre, chief engineer.

*Daily discharge, in second-feet, of Pitman Creek near Shaver, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 1.1 | 1.1 | 0.7 | 1.0 | 0.9 | 8.9 | 56 | 89 | 23 | 4.1 | 12 |
| 2 | .4 | 1.6 | .8 | .9 | .9 | 1.1 | 12 | 56 | 89 | 21 | 3.4 | 8.9 |
| 3 | .4 | 1.1 | .8 | 1.0 | .9 | 1.3 | 13 | 65 | 108 | 18 | 2.9 | 5.9 |
| 4 | .4 | 1.6 | .8 | .6 | .9 | 1.5 | 14 | 79 | 86 | 16 | 2.4 | 3.4 |
| 5 | .6 | 1.6 | .8 | .4 | 1.0 | 1.5 | 15 | 79 | 86 | 14 | 2.4 | 2.4 |
| 6 | 1.1 | 1.6 | .8 | .4 | .9 | 1.1 | 11 | 108 | 102 | 12 | 1.9 | 2.4 |
| 7 | .8 | 2.2 | .4 | .7 | .9 | 2.6 | 12 | 112 | 86 | 11 | 1.9 | 2.9 |
| 8 | .8 | 2.2 | .4 | .7 | .7 | 3.4 | 12 | 103 | 74 | 11 | 1.4 | 2.9 |
| 9 | .4 | 1.6 | .4 | .7 | .8 | 4.5 | 12 | 112 | 72 | 10 | 1.4 | 3.4 |
| 10 | .4 | 1.6 | .4 | .7 | .9 | 4.5 | 16 | 109 | 72 | 8.1 | 1.4 | 1.9 |
| 11 | .4 | 1.1 | .4 | .8 | 1.0 | 4.5 | 22 | 112 | 72 | 8.1 | 1.0 | 1.2 |
| 12 | .4 | 1.1 | .4 | .9 | 1.1 | 6.5 | 32 | 108 | 63 | 7.3 | 1.0 | 1.9 |
| 13 | .8 | 1.1 | 1.0 | .8 | 1.2 | 2.1 | 41 | 92 | 69 | 7.3 | 1.0 | 1.6 |
| 14 | 1.1 | .8 | 2.2 | .7 | 1.3 | 3.2 | 38 | 92 | 53 | 5.9 | 1.0 | 1.4 |
| 15 | 1.1 | .8 | 2.2 | .6 | 1.5 | 3.7 | 31 | 89 | 52 | 4.6 | 1.0 | 1.4 |
| 16 | .8 | .8 | 1.6 | .4 | 1.4 | 3.7 | 19 | 110 | 45 | 4.1 | 1.0 | 1.4 |
| 17 | .8 | .8 | .8 | .3 | 1.1 | 4.5 | 22 | 112 | 40 | 4.6 | .7 | 1.0 |
| 18 | .4 | 1.1 | .4 | .6 | .9 | 3.7 | 18 | 135 | 26 | 4.1 | .7 | .7 |
| 19 | .4 | .8 | .4 | .4 | .8 | 3.2 | 14 | 103 | 28 | 3.4 | .7 | .7 |
| 20 | .4 | .8 | .4 | .6 | .7 | 2.6 | 22 | 96 | 26 | 3.4 | .7 | .5 |
| 21 | .4 | 1.1 | .4 | .6 | .6 | 3.4 | 31 | 94 | 22 | 17 | .7 | .3 |
| 22 | .4 | 1.1 | .4 | .7 | .4 | 4.1 | 45 | 110 | 21 | 14 | .5 | .3 |
| 23 | .4 | 1.1 | .7 | .7 | .6 | 4.1 | 59 | 97 | 20 | 7.3 | .7 | .3 |
| 24 | .4 | 1.1 | .8 | .8 | .6 | 3.4 | 74 | 97 | 20 | 6.6 | 41 | .2 |
| 25 | .4 | .8 | .4 | .9 | .6 | 2.9 | 82 | 89 | 16 | 6.6 | 6.6 | .2 |
| 26 | .4 | 1.1 | .7 | 1.0 | .7 | 2.4 | 92 | 81 | 46 | 8.1 | 5.2 | .2 |
| 27 | .8 | 1.1 | .8 | 1.0 | .8 | 2.9 | 96 | 81 | 63 | 6.6 | 4.1 | .3 |
| 28 | .8 | 1.1 | .5 | .9 | .8 | 4.1 | 87 | 110 | 45 | 5.9 | 7.3 | .2 |
| 29 | .8 | 1.1 | .4 | 1.0 | ..... | 4.1 | 81 | 128 | 37 | 11 | 18 | .1 |
| 30 | 1.1 | .8 | .7 | .9 | ..... | 5.9 | 63 | 117 | 26 | 8.9 | 85 | .1 |
| 31 | 1.1 | ..... | .7 | 1.0 | ..... | 7.3 | ..... | 107 | ..... | 4.6 | 56 | ..... |

*Monthly discharge of Pitman Creek near Shaver, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 1.1 | 0.4 | 0.62 | 38 |
| November | 2.2 | .8 | 1.19 | 71 |
| December | 2.2 | .4 | .76 | 47 |
| January | 1.0 | .3 | .72 | 44 |
| February | 1.5 | .4 | .89 | 49 |
| March | 7.3 | .9 | 3.38 | 208 |
| April | 96 | 8.9 | 36.5 | 2,170 |
| May | 135 | 56 | 98.0 | 6,030 |
| June | 108 | 16 | 55.1 | 3,280 |
| July | 23 | 3.4 | 9.47 | 582 |
| August | 85 | .5 | 8.29 | 510 |
| September | 12 | .1 | 2.00 | 119 |
| The year | 135 | .1 | 18.2 | 13,100 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### CRANE VALLEY RESERVOIR NEAR NORTH FORK, CAL.

Crane Valley reservoir was formed by constructing a dam on North Fork Creek in the E. ½ sec. 26, T. 7 S., R. 22 E. The released water flows down the natural channel of North Fork Creek to a point just above the mouth of South Fork Creek, where it is diverted into the power canal.

Records show the total flow into the reservoir, including that of South Fork ditch,[1] which diverts water from South Fork Creek about one-fourth mile below the mouth of Browns Creek.

Records from April, 1910, furnished by San Joaquin Light & Power Corporation.

*Daily discharge, in second-feet, into Crane Valley reservoir near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.5 | 5 | 8 | 10 | 30 | 26 | 139 | 54 | 50 | 10 | 4.7 | 23 |
| 2 | 3.5 | 5 | 8 | 10 | 30 | 17 | 80 | 55 | 62 | 8.8 | 11 | 4.6 |
| 3 | 3.5 | 4.5 | 8 | 10 | 30 | 12 | 76 | 57 | 52 | 10 | 10 | 6.9 |
| 4 | 3.5 | 4.5 | 8 | 10 | 28 | 19 | 79 | 46 | 50 | 12 | 6.8 | 5.5 |
| 5 | 3.5 | 4.5 | 8 | 10 | 25 | 17 | 88 | 53 | 47 | 12 | 9 | 6.5 |
| 6 | 3.5 | 4.5 | 8 | 10 | 23 | 25 | 78 | 60 | 42 | 8 | 6.7 | 6.7 |
| 7 | 3.5 | 4.5 | 8 | 10 | 29 | 31 | 71 | 59 | 38 | 8.8 | 8.8 | 7.6 |
| 8 | 3.5 | 4.5 | 8 | 40 | 53 | 46 | 73 | 50 | 31 | 8.5 | 8.4 | 4.1 |
| 9 | 3.5 | 10 | 8 | 25 | 33 | 40 | 75 | 65 | 37 | 6.7 | 10 | 5.6 |
| 10 | 3.5 | 87 | 8 | 15 | 33 | 51 | 75 | 67 | 35 | 7.7 | 8.6 | 6.5 |
| 11 | 3.5 | 15 | 8 | 15 | 33 | 49 | 80 | 79 | 35 | 7.5 | 6.1 | 4.3 |
| 12 | 3.5 | 15 | 8 | 15 | 33 | 37 | 84 | 53 | 29 | 8.3 | 7 | 5.0 |
| 13 | 3.5 | 15 | 8 | 18 | 33 | 36 | 79 | 57 | 24 | 8.8 | 7 | 8.5 |
| 14 | 3.5 | 15 | 24 | 48 | 31 | 28 | 111 | 45 | 27 | 5.4 | 8.2 | 4.5 |
| 15 | 3.5 | 12 | 20 | 125 | 25 | 26 | 71 | 43 | 28 | 5.9 | 7.2 | 3.4 |
| 16 | 3.5 | 9 | 20 | 62 | 22 | 35 | 70 | 41 | 21 | 6.6 | 5.4 | 5.9 |
| 17 | 3.5 | 9 | 14 | 20 | 30 | 46 | 73 | 46 | 22 | 6.2 | 7.3 | 5.4 |
| 18 | 3.5 | 9 | 13 | 25 | 29 | 65 | 75 | 72 | 22 | 6.3 | 7.1 | 4.4 |
| 19 | 3.5 | 8.5 | 12 | 20 | 25 | 54 | 73 | 58 | 21 | 6.5 | 6 | 5.1 |
| 20 | 3.5 | 8.5 | 12 | 20 | 15 | 36 | 56 | 54 | 22 | 6.4 | 7.4 | 5.2 |
| 21 | 3.5 | 8.5 | 11 | 25 | 20 | 31 | 68 | 54 | 23 | 6.9 | 5 | 4.1 |
| 22 | 3.5 | 8.5 | 11 | 25 | 20 | 58 | 77 | 53 | 18 | 16 | 4.6 | 4.2 |
| 23 | 3.5 | 8.5 | 11 | 25 | 20 | 52 | 84 | 50 | 20 | 9.8 | 4.6 | 4.8 |
| 24 | 3.5 | 8.5 | 11 | 25 | 58 | 35 | 60 | 49 | 14 | 6 | 6.3 | 5.6 |
| 25 | 3.5 | 8.5 | 11 | 35 | 27 | 37 | 59 | 50 | 9.4 | 5.8 | 3.3 | 3.1 |
| 26 | 3.5 | 8 | 11 | 38 | 23 | 50 | 65 | 44 | 49 | 6.2 | 4.2 | 3.0 |
| 27 | 3.5 | 8 | 10 | 34 | 20 | 61 | 47 | 61 | 26 | 8.4 | 2.6 | 2.3 |
| 28 | 4 | 8 | 10 | 32 | 20 | 49 | 30 | 78 | 16 | 5.3 | 3.3 | 2.8 |
| 29 | 5.5 | 8 | 10 | 30 | ..... | 63 | 29 | 55 | 15 | 6.2 | 4.2 | 10 |
| 30 | 7 | 8 | 10 | 30 | ..... | 81 | 42 | 73 | 12 | 5.5 | 5.5 | 3.1 |
| 31 | 6 | ..... | 10 | 30 | ..... | 95 | ..... | 60 | ..... | 4.5 | 43 | ..... |

[1] Also known as Browns Creek ditch.

*Monthly discharge into Crane Valley reservoir near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 7 | 3.5 | 3.77 | 232 |
| November | 87 | 4.5 | 11.1 | 660 |
| December | 24 | 8 | 10.8 | 664 |
| January | 125 | 10 | 27.3 | 1,680 |
| February | 58 | 15 | 28.5 | 1,580 |
| March | 95 | 12 | 42.2 | 2,590 |
| April | 139 | 29 | 72.2 | 4,300 |
| May | 79 | 41 | 56.2 | 3,460 |
| June | 62 | 9.4 | 29.9 | 1,780 |
| July | 16 | 4.5 | 7.77 | 478 |
| August | 43 | 2.6 | 7.72 | 475 |
| September | 23 | 2.3 | 5.72 | 340 |
| The year | 139 | 2.3 | 25.2 | 18,200 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### SOUTH FORK CREEK[1] NEAR NORTH FORK, CAL.

LOCATION.—In the SE. ¼ sec. 19, T. 8 S., R. 23 E., at concrete weir just above mouth, about 5 miles east of North Fork.

RECORDS AVAILABLE.—April 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Watson water-stage recorder.

DISCHARGE.—Computed from gage-height record which indicates head on 100-foot broad-crested concrete weir. Weir rating is checked by current-meter measurements.

DIVERSIONS.—Below the mouth of Browns Creek, about 6 miles above the station, water is diverted into Crane Valley reservoir. This diversion is combined with the discharge at the gaging station in order that record will show total run-off from the watershed.

COOPERATION.—Records of daily discharge furnished by San Joaquin Light & Power Corporation through G. O. Newman, chief engineer.

[1] Also known as South Fork of Willow Creek.

*Daily discharge, in second-feet, of South Fork Creek near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 4 | 7.5 | 6.2 | 14 | 18 | 77 | 34 | 12 | 14 | 6.2 | 7.5 |
| 2 | 2 | 4 | 7.5 | 6.2 | 14 | 20 | 65 | 25 | 11 | 14 | 5 | 6.2 |
| 3 | 2 | 4 | 6.2 | 6.2 | 14 | 24 | 48 | 24 | 12 | 13 | 5 | 5.6 |
| 4 | 2 | 4 | 6.2 | 7.5 | 14 | 27 | 16 | 24 | 12 | 12 | 4.5 | 5 |
| 5 | 4 | 5.5 | 6.2 | 7.5 | 14 | 30 | 18 | 24 | 9 | 12 | 4.5 | 4.5 |
| 6 | 4 | 7.5 | 6.2 | 7.5 | 14 | 34 | 16 | 24 | 7.5 | 11 | 4 | 4.5 |
| 7 | 4 | 7.5 | 6.2 | 7.5 | 12 | 34 | 16 | 22 | 7.5 | 11 | 4 | 4.5 |
| 8 | 4 | 7.5 | 6.2 | 7.5 | 16 | 27 | 18 | 22 | 6.2 | 9.8 | 4 | 4 |
| 9 | 4 | 6.2 | 6.2 | 7.5 | 16 | 21 | 21 | 21 | 6.2 | 9.8 | 3.5 | 4 |
| 10 | 4 | 38 | 6.2 | 7.5 | 16 | 16 | 21 | 21 | 6.2 | 9 | 3.5 | 4 |
| 11 | 4 | 18 | 6.2 | 9 | 16 | 12 | 27 | 21 | 9 | 9 | 3.5 | 3.5 |
| 12 | 4 | 14 | 6.2 | 9 | 16 | 9 | 27 | 21 | 9 | 9 | 3.5 | 3.5 |
| 13 | 4 | 12 | 6.2 | 9 | 16 | 7.5 | 30 | 21 | 9 | 8.2 | 3 | 3.5 |
| 14 | 4 | 11 | 6.2 | 9 | 16 | 9 | 34 | 21 | 7.5 | 8.2 | 3 | 3 |
| 15 | 4 | 9 | 11 | 12 | 24 | 9 | 27 | 18 | 7.5 | 8.2 | 3 | 2.5 |
| 16 | 4 | 7.5 | 11 | 14 | 21 | 11 | 24 | 16 | 6.2 | 8.2 | 3 | 2.5 |
| 17 | 4 | 7.5 | 9 | 14 | 21 | 18 | 24 | 16 | 6.2 | 7.5 | 3 | 2 |
| 18 | 4 | 7.5 | 7.5 | 14 | 21 | 18 | 18 | 14 | 6.2 | 7.5 | 3 | 2 |
| 19 | 4 | 7.5 | 7.5 | 14 | 30 | 18 | 16 | 14 | 6.2 | 6.8 | 2.5 | 2 |
| 20 | 4 | 7.5 | 7.5 | 14 | 30 | 16 | 21 | 9 | 6.2 | 6.8 | 2.5 | 2 |
| 21 | 4 | 7.5 | 6.2 | 14 | 27 | 14 | 53 | 9 | 5 | 6.8 | 2.5 | 2 |
| 22 | 4 | 7.5 | 6.2 | 14 | 27 | 14 | 53 | 8.2 | 5 | 12 | 2.5 | 2 |
| 23 | 4 | 7.5 | 6.2 | 14 | 27 | 16 | 53 | 7.5 | 5 | 11 | 2.5 | 1.5 |
| 24 | 4 | 7.5 | 6.2 | 14 | 34 | 16 | 65 | 6.2 | 4 | 9 | 2.5 | 1.5 |
| 25 | 4 | 7.5 | 6.2 | 12 | 30 | 16 | 65 | 5.6 | 11 | 8.2 | 2.5 | 1.5 |
| 26 | 4 | 7.5 | 6.2 | 12 | 27 | 18 | 65 | 5.6 | 59 | 7.5 | 2.5 | 1.5 |
| 27 | 4 | 7.5 | 6.2 | 12 | 24 | 18 | 65 | 4 | 48 | 7.5 | 2.5 | 1.5 |
| 28 | 4 | 7.5 | 6.2 | 14 | 21 | 24 | 65 | 42 | 27 | 7.5 | 2.5 | 1.5 |
| 29 | 4 | 7.5 | 6.2 | 16 | ..... | 30 | 65 | 21 | 18 | 7.5 | 2.5 | 1.5 |
| 30 | 9 | 7.5 | 6.2 | 16 | ..... | 38 | 65 | 12 | 16 | 7.5 | 2.5 | 1.5 |
| 31 | 8 | ..... | 6.2 | 16 | ..... | 77 | ..... | 18 | ..... | 7.5 | 12 | ..... |

*Monthly discharge of South Fork Creek near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 9 | 2 | 4.0 | 246 |
| November | 38 | 4 | 8.82 | 525 |
| December | 11 | 6.2 | 6.81 | 419 |
| January | 16 | 6.2 | 11.1 | 682 |
| February | 34 | 12 | 20.4 | 1,130 |
| March | 77 | 7.5 | 21.3 | 1,310 |
| April | 77 | 16 | 39.3 | 2,340 |
| May | 42 | 4 | 17.8 | 1,090 |
| June | 59 | 4 | 12.0 | 714 |
| July | 14 | 6.8 | 9.26 | 569 |
| August | 12 | 2.5 | 3.59 | 221 |
| September | 7.5 | 1.5 | 3.08 | 183 |
| The year | 77 | 1.5 | 13.0 | 9,430 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### SOUTH FORK DITCH[1] NEAR NORTH FORK, CAL.

This ditch, which diverts from South Fork Creek a short distance below the mouth of Browns Creek, empties into Crane Valley reservoir. The record of inflow into Crane Valley reservoir includes the discharge of this ditch.

*Daily discharge, in second-feet, of South Fork ditch near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | Day. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 6 | 5 | 45 | 33 | 33 | 16 | 6 | ..... | 16 | 37 | 33 | 15 |
| 2 | ..... | 6 | 5 | 44 | 32 | 35 | 17 | 6 | ..... | 18 | 39 | 33 | 14 |
| 3 | ..... | 6 | 5 | 43 | 32 | 35 | 18 | 6 | ..... | 19 | 39 | 34 | 14 |
| 4 | ..... | 6 | 5 | 33 | 32 | 34 | 19 | 6 | ..... | 19 | 39 | 33 | 14 |
| 5 | ..... | 6 | 5 | 42 | 33 | 32 | 20 | 6 | ..... | 16 | 30 | 33 | 13 |
| 6 | ..... | 6 | 5 | 42 | 33 | 31 | 21 | 6 | ..... | 15 | 41 | 33 | 13 |
| 7 | ..... | 6 | 5 | 41 | 33 | 30 | 22 | 6 | ..... | 13 | 41 | 32 | 12 |
| 8 | ..... | 5 | 11 | 41 | 33 | 28 | 23 | 6 | ..... | 15 | 42 | 32 | 12 |
| 9 | ..... | 5 | 15 | 41 | 33 | 30 | 24 | 6 | ..... | 13 | 11 | 30 | 6 |
| 10 | ..... | 5 | 22 | 42 | 34 | 25 | 25 | 6 | ..... | 17 | 0 | 29 | 2 |
| 11 | ..... | 5 | 24 | 42 | 33 | 20 | 26 | 6 | ..... | 19 | 14 | 27 | ..... |
| 12 | ..... | 5 | 21 | 42 | 33 | 20 | 27 | 6 | ..... | 23 | 0 | 27 | ..... |
| 13 | ..... | 5 | 21 | 42 | 33 | 20 | 28 | 6 | ..... | 26 | 0 | 34 | ..... |
| 14 | ..... | 5 | 17 | 42 | 33 | 19 | 29 | 6 | ..... | 27 | 12 | 33 | ..... |
| 15 | 3 | ..... | 15 | 33 | 33 | 16 | 30 | 6 | ..... | 28 | 20 | 33 | ..... |
| | | | | | | | 31 | 6 | ..... | 30 | ..... | 33 | ..... |

NOTE.—Ditch dry Oct. 1, 1912, to Jan. 14, 1913, Feb. 15–28, 1913, and June 26 to Sept. 30, 1913.

*Monthly discharge of South Fork ditch near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 0 | 0 | 0.0 | 0 |
| November | 0 | 0 | .0 | 0 |
| December | 0 | 0 | .0 | 0 |
| January | 6 | 0 | 3.2 | 197 |
| February | 6 | 0 | 2.8 | 156 |
| March | 30 | 5 | 16.0 | 984 |
| April | 45 | 0 | 32.7 | 1,950 |
| May | 34 | 27 | 32.3 | 1,990 |
| June | 35 | 0 | 17.4 | 1,040 |
| July | 0 | 0 | .0 | 0 |
| August | 0 | 0 | .0 | 0 |
| September | 0 | 0 | .0 | 0 |
| The year | 45 | 0 | 8.7 | 6,320 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### WHISKEY CREEK NEAR NORTH FORK, CAL.

LOCATION.—In the SE. ¼ sec. 16, T. 8 S., R. 23 E., just above highway bridge, about one-fourth mile below Cascadel ranch, and 6 miles east of North Fork.

RECORDS AVAILABLE.—April 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff on left bank about 500 feet above bridge.

CHANNEL.—Gravel.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

COOPERATION.—Records of daily discharge furnished by San Joaquin Light & Power Corporation.

[1] Also known as Browns Creek ditch.

*Daily discharge, in second-feet, of Whiskey Creek near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 4 | 4 | 5 | 6 | 7 | 21 | 18 | 13 | 9 | 4 | 5 |
| 2 | 2 | 4 | 4 | 5 | 6 | 6 | 17 | 16 | 11 | 9 | 4 | 4 |
| 3 | 2 | 4 | 4 | 5 | 6 | 5 | 16 | 16 | 10 | 8 | 3 | 4 |
| 4 | 2 | 4 | 4 | 5 | 6 | 6 | 16 | 12 | 10 | 8 | 3 | 4 |
| 5 | 3 | 4 | 4 | 5 | 6 | 6 | 14 | 14 | 10 | 8 | 3 | 3 |
| 6 | 3 | 6 | 4 | 5 | 6 | 8 | 14 | 15 | 9 | 7 | 3 | 3 |
| 7 | 3 | 6 | 4 | 5 | 6 | 9 | 14 | 14 | 9 | 7 | 2 | 2 |
| 8 | 3 | 5 | 4 | 6 | 7 | 12 | 15 | 14 | 9 | 7 | 2 | 2 |
| 9 | 3 | 5 | 4 | 7 | 7 | 11 | 16 | 19 | 9 | 6 | 2 | 2 |
| 10 | 3 | 20 | 4 | 7 | 7 | 11 | 16 | 21 | 8 | 6 | 2 | 2 |
| 11 | 3 | 12 | 4 | 6 | 7 | 11 | 17 | 21 | 7 | 6 | 2 | 2 |
| 12 | 3 | 10 | 4 | 6 | 7 | 9 | 17 | 17 | 9 | 8 | 2 | 2 |
| 13 | 3 | 9 | 4 | 6 | 7 | 9 | 18 | 16 | 8 | 8 | 2 | 2 |
| 14 | 3 | 8 | 4 | 6 | 7 | 8 | 19 | 15 | 8 | 7 | 2 | 2 |
| 15 | 3 | 6 | 8 | 8 | 10 | 8 | 18 | 14 | 8 | 6 | 2 | 2 |
| 16 | 3 | 5 | 8 | 8 | 8 | 10 | 18 | 15 | 8 | 6 | 2 | 2 |
| 17 | 3 | 4 | 8 | 7 | 8 | 13 | 17 | 16 | 7 | 5 | 2 | 2 |
| 18 | 3 | 4 | 7 | 7 | 8 | 18 | 16 | 20 | 7 | 5 | 2 | 2 |
| 19 | 3 | 4 | 6 | 7 | 8 | 16 | 15 | 18 | 7 | 5 | 2 | 2 |
| 20 | 3 | 4 | 5 | 7 | 8 | 12 | 16 | 18 | 7 | 5 | 2 | 2 |
| 21 | 3 | 4 | 5 | 7 | 8 | 12 | 19 | 17 | 6 | 11 | 2 | 2 |
| 22 | 3 | 4 | 5 | 7 | 8 | 17 | 19 | 17 | 6 | 12 | 2 | 2 |
| 23 | 3 | 4 | 5 | 7 | 8 | 15 | 20 | 17 | 6 | 9 | 3 | 2 |
| 24 | 3 | 4 | 5 | 7 | 12 | 12 | 20 | 16 | 6 | 6 | 3 | 2 |
| 25 | 3 | 4 | 5 | 7 | 11 | 12 | 20 | 16 | 16 | 6 | 3 | 2 |
| 26 | 3 | 4 | 5 | 7 | 10 | 12 | 19 | 14 | 28 | 6 | 3 | 1 |
| 27 | 3 | 4 | 5 | 7 | 8 | 14 | 18 | 19 | 24 | 5 | 5 | 1 |
| 28 | 3 | 4 | 5 | 7 | 7 | 11 | 18 | 25 | 19 | 5 | 4 | 1 |
| 29 | 3 | 4 | 5 | 7 | ..... | 15 | 18 | 22 | 15 | 4 | 3 | 1 |
| 30 | 7 | 4 | 5 | 7 | ..... | 18 | 17 | 19 | 10 | 4 | 3 | 1 |
| 31 | 6 | ..... | 5 | 7 | ..... | 22 | ..... | 16 | ..... | 4 | 7 | ..... |

*Monthly discharge of Whiskey Creek near North Fork, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 7 | 2 | 3.1 | 191 |
| November | 20 | 4 | 5.6 | 333 |
| December | 8 | 4 | 4.9 | 301 |
| January | 8 | 5 | 6.5 | 400 |
| February | 12 | 6 | 7.6 | 422 |
| March | 22 | 5 | 11.5 | 707 |
| April | 21 | 14 | 17.3 | 1,030 |
| May | 25 | 12 | 17.0 | 1,040 |
| June | 28 | 6 | 10.3 | 613 |
| July | 12 | 4 | 6.7 | 412 |
| August | 7 | 2 | 2.8 | 172 |
| September | 5 | 1 | 2.2 | 131 |
| The year | 28 | 1 | 7.9 | 5,750 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

## KINGS RIVER AND TRIBUTARIES

### KINGS RIVER NEAR SANGER, CAL.

LOCATION.—In the NW. ¼ sec. 8, T. 13 S., R. 24 E., about half a mile below new highway bridge at Piedra, near mouth of canyon, southwest of Red Mountain, and about 12 miles northeast of Sanger.

RECORDS AVAILABLE.—September 3, 1895, to September 30, 1913.

DRAINAGE AREA.—1,740 square miles.

GAGE.—Friez water-stage recorder on right bank; staff gage in two sections just above recording gage. Staff gage of U. S. Weather Bureau nearly opposite on left bank.

CHANNEL.—Gravel and small bowlders; shifts but slightly.

DISCHARGE MEASUREMENTS.—Made from cable 500 feet below gage.

DIVERSIONS.—Several miles above the station there is a small diversion for a flume used to float lumber to Sanger.

ACCURACY.—Results good.

*Discharge measurements of Kings River near Sanger, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 11 | R. C. Rice | 4.33 | 256 | July 16 | H. J. Tompkins | 5.51 | 1,010 |
| Apr. 28 | E. C. Murphy | 8.14 | 3,910 | Aug. 17 | Lasley Lee | 4.80 | 487 |
| June 11 | ....do | 7.42 | 2,930 | | | | |

*Daily gage height, in feet, of Kings River near Sanger, Cal., for the year ending Sept. 30, 1913.*

[O. G. Williams, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | 4.18 | ..... | 4.40 | 4.64 | 6.15 | 6.9 | 8.1 | 6.7 | ..... | 7.65 |
| 2 | ..... | ..... | ..... | ..... | 4.41 | 4.62 | 6.6 | 6.75 | 8.1 | 6.8 | ..... | 6.8 |
| 3 | ..... | 4.22 | ..... | ..... | 4.42 | 4.67 | 5.95 | 6.6 | 8.3 | 6.7 | ..... | 6.2 |
| 4 | ..... | 4.22 | ..... | ..... | 4.42 | 4.75 | 5.75 | 6.85 | 8.0 | 6.7 | 5.7 | 5.8 |
| 5 | ..... | 4.25 | ..... | ..... | 4.42 | 4.82 | 5.85 | 7.45 | 8.2 | 6.7 | 5.55 | 5.55 |
| 6 | 4.34 | 4.27 | ..... | 4.06 | 4.41 | 4.92 | 5.8 | 8.2 | 8.3 | 6.7 | 5.4 | 5.37 |
| 7 | ..... | 4.27 | ..... | ..... | 4.42 | 5.00 | 5.65 | 8.5 | 8.5 | 6.8 | 5.29 | 5.24 |
| 8 | ..... | 4.30 | 4.06 | ..... | 4.50 | 5.02 | 5.6 | 8.6 | 8.5 | 6.7 | ..... | 5.17 |
| 9 | ..... | 4.29 | ..... | ..... | 4.66 | 5.03 | 5.7 | 8.7 | 8.2 | 6.6 | ..... | 5.09 |
| 10 | ..... | 4.37 | ..... | ..... | 4.62 | 5.07 | 5.9 | 8.8 | 7.95 | 6.45 | ..... | 5.01 |
| 11 | 4.32 | 4.46 | ..... | ..... | 4.59 | 5.09 | 6.25 | 8.8 | 7.6 | ..... | 5.20 | 4.95 |
| 12 | 4.32 | 4.38 | ..... | 4.04 | 4.56 | 5.03 | 6.45 | 8.7 | 7.7 | ..... | 5.12 | 4.89 |
| 13 | 4.30 | 4.35 | ..... | 4.08 | 4.55 | 4.97 | 6.55 | 8.4 | 8.1 | ..... | 5.03 | 4.88 |
| 14 | ..... | 4.33 | ..... | ..... | 4.54 | 4.91 | 6.45 | 8.0 | 8.2 | 5.85 | 4.95 | ..... |
| 15 | ..... | 4.31 | 4.20 | 4.18 | 4.53 | ..... | 6.15 | 8.1 | 8.3 | 5.7 | ..... | ..... |
| 16 | ..... | 4.28 | ..... | 4.78 | 4.52 | ..... | 6.0 | 8.6 | 8.1 | ..... | ..... | ..... |
| 17 | ..... | 4.27 | ..... | 4.64 | 4.53 | 4.81 | 6.0 | 9.1 | 7.8 | ..... | 4.80 | ..... |
| 18 | ..... | 4.26 | ..... | 4.41 | 4.56 | 4.96 | 6.0 | 9.4 | 7.75 | ..... | 4.78 | ..... |
| 19 | ..... | 4.25 | ..... | 4.42 | 4.59 | 5.05 | 5.9 | 8.6 | 7.35 | ..... | 4.73 | ..... |
| 20 | 4.20 | 4.26 | ..... | 4.39 | 4.51 | 4.98 | 6.0 | 8.5 | 7.1 | ..... | 4.70 | ..... |
| 21 | ..... | 4.26 | ..... | 4.33 | 4.44 | 4.90 | 6.1 | 8.9 | 7.15 | ..... | 6.0 | 4.60 |
| 22 | ..... | 4.25 | 4.10 | 4.36 | 4.46 | ..... | 6.3 | 9.4 | 7.25 | ..... | 4.71 | 4.60 |
| 23 | ..... | 4.24 | ..... | 4.39 | 4.44 | ..... | 6.75 | 9.8 | 7.2 | ..... | 4.87 | 4.59 |
| 24 | ..... | 4.22 | ..... | 4.31 | 4.44 | 4.96 | 7.1 | 9.8 | ..... | ..... | 5.18 | 4.57 |
| 25 | ..... | 4.22 | ..... | 4.34 | 5.08 | 4.97 | 7.45 | 9.6 | ..... | ..... | 5.46 | 4.54 |
| 26 | ..... | 4.21 | ..... | 4.38 | 4.83 | 4.90 | 7.85 | 9.3 | ..... | ..... | 6.3 | 4.52 |
| 27 | 4.18 | 4.20 | ..... | 4.39 | 4.73 | 4.94 | 8.2 | 9.2 | ..... | ..... | 6.8 | 4.51 |
| 28 | ..... | 4.20 | ..... | 4.41 | 4.73 | 5.03 | 8.1 | 9.3 | ..... | 6.05 | 7.8 | 4.49 |
| 29 | ..... | 4.19 | 4.05 | 4.40 | ..... | 5.10 | 7.8 | 8.7 | ..... | 6.3 | 7.15 | 4.46 |
| 30 | ..... | 4.19 | ..... | 4.40 | ..... | 5.31 | 7.45 | 8.6 | 6.65 | 6.05 | 7.1 | 4.46 |
| 31 | ..... | ..... | ..... | 4.40 | ..... | 5.75 | ..... | 8.4 | ..... | 5.75 | 7.7 | ..... |

*Daily discharge, in second-feet, of Kings River near Sanger, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 185 | 209 | 196 | 144 | 300 | 429 | 1,580 | 2,320 | 3,900 | 2,100 | 1,000 | 3,250 |
| 2 | 202 | 211 | 189 | 144 | 305 | 417 | 2,000 | 2,160 | 3,900 | 2,210 | 1,180 | 2,210 |
| 3 | 219 | 214 | 181 | 144 | 310 | 447 | 1,400 | 2,000 | 4,220 | 2,100 | 1,350 | 1,620 |
| 4 | 236 | 214 | 174 | 144 | 310 | 495 | 1,240 | 2,260 | 3,750 | 2,100 | 1,180 | 1,250 |
| 5 | 253 | 228 | 166 | 144 | 310 | 538 | 1,320 | 2,980 | 4,060 | 2,100 | 1,030 | 1,030 |
| 6 | 270 | 236 | 159 | 144 | 305 | 603 | 1,250 | 4,060 | 4,220 | 2,100 | 920 | 896 |
| 7 | 268 | 236 | 151 | 144 | 310 | 655 | 1,140 | 4,560 | 4,560 | 2,210 | 832 | 795 |
| 8 | 266 | 250 | 144 | 144 | 350 | 668 | 1,090 | 4,740 | 4,560 | 2,100 | 790 | 742 |
| 9 | 264 | 246 | 153 | 140 | 441 | 674 | 1,160 | 4,920 | 4,060 | 2,000 | 747 | 683 |
| 10 | 262 | 285 | 161 | 140 | 417 | 700 | 1,350 | 5,110 | 3,680 | 1,850 | 705 | 627 |
| 11 | 260 | 330 | 170 | 140 | 400 | 714 | 1,660 | 5,110 | 3,180 | 1,710 | 765 | 585 |
| 12 | 260 | 290 | 179 | 136 | 383 | 674 | 1,850 | 4,920 | 3,320 | 1,580 | 705 | 544 |
| 13 | 250 | 275 | 188 | 152 | 378 | 635 | 1,950 | 4,390 | 3,900 | 1,440 | 641 | 537 |
| 14 | 244 | 265 | 196 | 152 | 372 | 596 | 1,850 | 3,750 | 4,060 | 1,320 | 585 | 544 |
| 15 | 237 | 255 | 205 | 196 | 366 | 544 | 1,580 | 3,900 | 4,220 | 1,180 | 552 | 518 |
| 16 | 231 | 241 | 199 | 513 | 361 | 532 | 1,440 | 4,740 | 3,900 | 1,030 | 518 | 492 |
| 17 | 224 | 236 | 192 | 429 | 366 | 532 | 1,440 | 5,200 | 3,460 | 1,220 | 485 | 465 |
| 18 | 218 | 232 | 186 | 301 | 383 | 629 | 1,430 | 6,330 | 3,390 | 1,420 | 472 | 439 |
| 19 | 211 | 228 | 179 | 310 | 400 | 688 | 1,360 | 4,740 | 2,860 | 1,610 | 440 | 413 |
| 20 | 205 | 232 | 173 | 295 | 356 | 642 | 1,420 | 4,560 | 2,550 | 1,800 | 420 | 386 |
| 21 | 204 | 232 | 166 | 265 | 320 | 590 | 1,530 | 5,300 | 2,610 | 1,760 | 402 | 360 |
| 22 | 202 | 228 | 160 | 280 | 330 | 603 | 1,710 | 6,330 | 2,730 | 1,720 | 426 | 360 |
| 23 | 201 | 223 | 157 | 295 | 320 | 642 | 2,160 | 7,210 | 2,670 | 1,680 | 530 | 354 |
| 24 | 200 | 214 | 154 | 255 | 320 | 629 | 2,550 | 7,210 | 2,550 | 1,640 | 750 | 344 |
| 25 | 199 | 214 | 151 | 270 | 707 | 636 | 2,980 | 6,770 | 2,550 | 1,610 | 971 | 327 |
| 26 | 197 | 210 | 149 | 290 | 544 | 590 | 3,530 | 6,120 | 2,210 | 1,570 | 1,710 | 316 |
| 27 | 196 | 205 | 146 | 295 | 483 | 616 | 4,060 | 5,910 | 3,600 | 1,530 | 2,210 | 310 |
| 28 | 199 | 205 | 143 | 305 | 483 | 671 | 3,900 | 6,120 | 3,600 | 1,480 | 3,460 | 300 |
| 29 | 201 | 200 | 140 | 300 | ..... | 720 | 3,460 | 4,920 | 2,430 | 1,710 | 2,610 | 285 |
| 30 | 204 | 200 | 141 | 300 | ..... | 872 | 2,980 | 4,740 | 2,050 | 1,480 | 2,550 | 285 |
| 31 | 206 | ..... | 143 | 300 | ..... | 1,220 | ..... | 4,390 | ..... | 1,200 | 3,320 | ..... |

NOTE.—Discharge determined from two well-defined rating curves applicable as follows: Oct. 1, 1912, to May 23, 1913, and May 24 to Sept. 30, 1913. Discharge for days for which no gage height is given estimated from Weather Bureau gage record at Piedra, knowledge of the daily fluctuation of the stream, and indications on the record of the water-stage recorder while the clock was not running.

*Monthly discharge of Kings River near Sanger, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 1,740 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 270 | 185 | 225 | 0.129 | 0.15 | 13,800 | B. |
| November | 330 | 200 | 235 | .135 | .15 | 14,000 | B. |
| December | 205 | 140 | 167 | .096 | .11 | 10,300 | C. |
| January | 513 | 136 | 233 | .134 | .15 | 14,300 | B. |
| February | 707 | 300 | 380 | .218 | .23 | 21,100 | B. |
| March | 1,220 | 417 | 632 | .363 | .42 | 38,900 | A. |
| April | 4,060 | 1,090 | 1,950 | 1.12 | 1.25 | 116,000 | A. |
| May | 7,210 | 2,000 | 4,780 | 2.75 | 3.17 | 294,000 | A. |
| June | 4,560 | 2,050 | 3,420 | 1.97 | 2.20 | 204,000 | A. |
| July | 2,210 | 1,030 | 1,700 | .977 | 1.13 | 105,000 | B. |
| August | 3,460 | 402 | 1,110 | .638 | .74 | 68,200 | A. |
| September | 3,250 | 285 | 709 | .407 | .45 | 42,200 | A. |
| The year | 7,210 | 136 | 1,300 | .747 | 10.15 | 942,000 | |

### DINKEY CREEK NEAR OCKENDEN, CAL.

LOCATION.—In the NE. ¼ sec. 20, T. 10 S., R. 26 E., above trail bridge at Dinkey Creek ranger station, in Sierra National Forest, about 11 miles above junction with North Fork of Kings River, and about 9½ miles southeast of Ockenden Rock Creek enters 3 miles above and Bear Creek 1½ miles below the station.

RECORDS AVAILABLE.—September 17, 1910, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on right bank about 400 feet below ranger station.

CHANNEL.—Gravel and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

ACCURACY.—Rating curve fairly well defined; results good for period for which gage heights are recorded.

COOPERATION.—Station maintained in cooperation with United States Forest Service. Records taken only during the summer months.

*Discharge measurements of Dinkey Creek near Ockenden, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Oct. 20 | 0.33 | 2.3 |
| June 21 | .96 | 61 |

*Daily gage height, in feet, and discharge, in second-feet, of Dinkey Creek near Ockenden, Cal., for the year ending Sept. 30, 1913.*

| Day. | May. | | June. | | July. | | Aug. | | Sept. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | | | 0.9 | 45 | | | | |
| 2 | | | | | .9 | 45 | | | | |
| 3 | | | | | .8 | 33 | | | | |
| 4 | | | | | .8 | 33 | 0.5 | 9 | 0.5 | 9 |
| 5 | | | 2.0 | 320 | | | | | | |
| 6 | | | 1.90 | 284 | | | | | | |
| 7 | | | 1.65 | 208 | | | | | | |
| 8 | | | 1.50 | 166 | | | .4 | 4 | | |
| 9 | 2.0 | 320 | 1.60 | 193 | | | | | .4 | 4 |
| 10 | 1.95 | 302 | 1.50 | 166 | .7 | 23 | | | | |
| 11 | 1.80 | 252 | | | | | | | | |
| 12 | | | 1.40 | 139 | | | | | | |
| 13 | | | 1.40 | 139 | | | | | | |
| 14 | | | 1.30 | 116 | | | .4 | 4 | | |
| 15 | 1.80 | 252 | 1.25 | 106 | | | | | | |
| 16 | 1.85 | 268 | 1.25 | 106 | .6 | 16 | | | | |
| 17 | 2.2 | 399 | 1.15 | 86 | .6 | 16 | | | | |
| 18 | 2.1 | 358 | 1.10 | 76 | | | | | | |
| 19 | | | 1.10 | 76 | | | | | | |
| 20 | | | 1.00 | 59 | | | | | .4 | 4 |
| 21 | | | 1.00 | 59 | | | | | | |
| 22 | | | 1.00 | 59 | | | | | | |
| 23 | 2.2 | 399 | 1.00 | 59 | .9 | 45 | | | | |
| 24 | 1.90 | 284 | .90 | 45 | | | .4 | 4 | | |
| 25 | 1.80 | 252 | | | .6 | 16 | | | | |
| 26 | 1.75 | 237 | 1.60 | 193 | | | | | | |
| 27 | 1.65 | 208 | 1.65 | 208 | .8 | 33 | .8 | 33 | | |
| 28 | 2.1 | 358 | 1.10 | 76 | | | | | .3 | 2 |
| 29 | | | 1.00 | 59 | | | | | | |
| 30 | | | 1.00 | 59 | | | 1.2 | 95 | | |
| 31 | | | | | | | .9 | 45 | | |

NOTE.—Discharge determined from a fairly well defined rating curve.

### BIG CREEK NEAR TOLLHOUSE, CAL.

LOCATION.—In the SW. ¼ sec. 27, T. 10 S., R. 25 E., at Hawk's mine, in Sierra National Forest, 3½ miles above junction with Kings River, and about 9 miles east of Tollhouse.

RECORDS AVAILABLE.—March 21, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on left bank near observer's cabin.

CHANNEL.—Bowlders and solid rock; appears permanent.

DISCHARGE MEASUREMENTS.—Made by wading.

DIVERSIONS.—Two small ditches above station. One is used to operate a small stamp mill and the water is returned below the gage. The other ditch is used for irrigation.

ACCURACY.—Rating curve fairly well defined; results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service. Gage-height record furnished by I. F. Hawk.

The following discharge measurement was made by H. J. Tompkins:
October 24, 1912: Gage height, −1.50 feet; discharge, 1.0 second-foot.

*Daily gage height, in feet, of Big Creek near Tollhouse, Cal., for the year ending Sept. 30, 1913.*

[I. F. Hawk, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | −1.6 | −1.4 | −1.4 | −1.3 | −0.9 | −0.8 | 0.0 | −0.7 | −0.9 | ..... |
| 2 | −1.5 | −1.4 | −1.4 | −1.3 | −.9 | −.9 | +.3 | −.7 | −.9 | ..... |
| 3 | −1.5 | −1.4 | −1.4 | −1.3 | −.9 | −.7 | −.3 | −.7 | −.1 | ..... |
| 4 | −1.5 | −1.4 | −1.4 | −1.3 | −.9 | −.6 | −.4 | −.7 | −.3 | ..... |
| 5 | −1.5 | −1.4 | −1.4 | −1.3 | −1.0 | −.6 | −.2 | −.7 | −.6 | ..... |
| 6 | −1.5 | −1.4 | −1.4 | −1.3 | −1.1 | −.6 | −.5 | −.7 | −.6 | ..... |
| 7 | −1.5 | −1.4 | −1.4 | −1.3 | −.9 | −.6 | −.5 | −.7 | −.9 | ..... |
| 8 | −1.5 | −1.4 | −1.4 | −1.3 | −.8 | −.6 | −.6 | −.8 | −.9 | ..... |
| 9 | −1.5 | −1.4 | −1.4 | −1.3 | −.8 | −.6 | −.6 | −.8 | −.9 | ..... |
| 10 | −1.5 | −1.3 | −1.4 | −1.3 | −.9 | −.6 | −.6 | −.8 | −.9 | ..... |
| 11 | −1.5 | −1.3 | −1.4 | −1.3 | −1.0 | −.6 | −.6 | −.8 | −.9 | ..... |
| 12 | −1.5 | −1.3 | −1.4 | −1.3 | −1.0 | −.7 | −.6 | −.8 | −1.0 | ..... |
| 13 | −1.5 | −1.4 | −1.4 | −1.3 | −1.0 | −.8 | −.3 | −.8 | −1.0 | ..... |
| 14 | −1.5 | −1.4 | −1.4 | −1.3 | −1.0 | −.8 | −.3 | −.8 | −1.1 | ..... |
| 15 | −1.5 | −1.4 | −1.2 | −1.0 | −1.0 | −1.0 | −.5 | −.9 | −1.1 | ..... |
| 16 | −1.5 | −1.4 | −1.2 | −.8 | −1.0 | −1.0 | −.5 | −1.0 | −1.1 | ..... |
| 17 | −1.5 | −1.4 | −1.3 | −.8 | −1.0 | −1.0 | −.5 | −1.0 | −1.1 | ..... |
| 18 | −1.5 | −1.4 | −1.3 | −.4 | −1.0 | −.7 | −.3 | −1.0 | −1.1 | ..... |
| 19 | −1.5 | −1.4 | −1.3 | −.6 | −1.0 | −.7 | −.5 | −1.0 | −1.1 | ..... |
| 20 | −1.5 | −1.4 | −1.3 | −.8 | −1.1 | −.7 | −.5 | −1.0 | −1.1 | ..... |
| 21 | −1.5 | −1.4 | −1.3 | −.9 | −1.1 | −.7 | −.5 | −1.0 | −1.2 | ..... |
| 22 | −1.5 | −1.4 | −1.3 | −.9 | −1.1 | −.7 | −.5 | −1.1 | −1.2 | −1.5 |
| 23 | −1.5 | −1.4 | −1.3 | −.9 | −1.1 | −.7 | −.2 | −1.1 | −1.2 | −1.5 |
| 24 | −1.5 | −1.4 | −1.3 | −.3 | −.2 | −.7 | −.2 | −1.1 | −1.2 | −1.5 |
| 25 | −1.5 | −1.4 | −1.3 | −1.1 | −.5 | −.7 | −.2 | −1.1 | −1.2 | ..... |
| 26 | −1.5 | −1.4 | −1.3 | −1.1 | −.6 | −.8 | −.2 | −1.2 | −.9 | ..... |
| 27 | −1.5 | −1.4 | −1.3 | −1.0 | −.8 | −.6 | −.2 | −1.2 | −.5 | ..... |
| 28 | −1.4 | −1.4 | −1.3 | −.9 | −.8 | −.4 | −.3 | +.3 | −.8 | ..... |
| 29 | −1.4 | −1.4 | −1.3 | −.9 | ..... | −.4 | −.5 | −.6 | −.9 | ..... |
| 30 | −1.4 | −1.4 | −1.3 | −.9 | ..... | −.1 | −.5 | −.7 | −.9 | ..... |
| 31 | −1.4 | ..... | −1.3 | −.9 | ..... | −.0 | ..... | −.7 | ..... | ..... |

*Daily discharge, in second-feet, of Big Creek near Tollhouse, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 1.7 | 1.7 | 2.5 | 7.5 | 9 | 25 | 11 | 7.5 | ..... |
| 2 | 1.0 | 1.7 | 1.7 | 2.5 | 7.5 | 7.5 | 32 | 11 | 7.5 | ..... |
| 3 | 1.0 | 1.7 | 1.7 | 2.5 | 7.5 | 11 | 19 | 11 | 23 | ..... |
| 4 | 1.0 | 1.7 | 1.7 | 2.5 | 7.5 | 13 | 17 | 11 | 19 | ..... |
| 5 | 1.0 | 1.7 | 1.7 | 2.5 | 6 | 13 | 21 | 11 | 13 | ..... |
| 6 | 1.0 | 1.7 | 1.7 | 2.5 | 4.5 | 13 | 15 | 11 | 9 | ..... |
| 7 | 1.0 | 1.7 | 1.7 | 2.5 | 7.5 | 13 | 15 | 11 | 7.5 | ..... |
| 8 | 1.0 | 1.7 | 1.7 | 2.5 | 9 | 13 | 13 | 9 | 7.5 | ..... |
| 9 | 1.0 | 1.7 | 1.7 | 2.5 | 9 | 13 | 13 | 9 | 7.5 | ..... |
| 10 | 1.0 | 2.5 | 1.7 | 2.5 | 7.5 | 13 | 13 | 9 | 7.5 | ..... |
| 11 | 1.0 | 2.5 | 1.7 | 2.5 | 6 | 13 | 13 | 9 | 7.5 | ..... |
| 12 | 1.0 | 2.5 | 1.7 | 2.5 | 6 | 11 | 13 | 9 | 6 | ..... |
| 13 | 1.0 | 1.7 | 1.7 | 2.5 | 6 | 9 | 19 | 9 | 6 | ..... |
| 14 | 1.0 | 1.7 | 1.7 | 2.5 | 6 | 9 | 19 | 9 | 4.5 | ..... |
| 15 | 1.0 | 1.7 | 3.5 | 6 | 6 | 6 | 15 | 7.5 | 4.5 | ..... |
| 16 | 1.0 | 1.7 | 3.5 | 9 | 6 | 6 | 15 | 6 | 4.5 | ..... |
| 17 | 1.0 | 1.7 | 2.5 | 9 | 6 | 6 | 15 | 6 | 4.5 | ..... |
| 18 | 1.0 | 1.7 | 2.5 | 17 | 6 | 11 | 19 | 6 | 4.5 | ..... |
| 19 | 1.0 | 1.7 | 2.5 | 13 | 6 | 11 | 15 | 6 | 4.5 | ..... |
| 20 | 1.0 | 1.7 | 2.5 | 9 | 4.5 | 11 | 15 | 6 | 4.5 | ..... |
| 21 | 1.0 | 1.7 | 2.5 | 7.5 | 4.5 | 11 | 15 | 6 | 3.5 | ..... |
| 22 | 1.0 | 1.7 | 2.5 | 7.5 | 4.5 | 11 | 15 | 4.5 | 3.5 | 1.0 |
| 23 | 1.0 | 1.7 | 2.5 | 7.5 | 4.5 | 11 | 21 | 4.5 | 3.5 | 1.0 |
| 24 | 1.0 | 1.7 | 2.5 | 6 | 21 | 11 | 21 | 4.5 | 3.5 | 1.0 |
| 25 | 1.0 | 1.7 | 2.5 | 4.5 | 15 | 11 | 21 | 4.5 | 3.5 | ..... |
| 26 | 1.0 | 1.7 | 2.5 | 4.5 | 13 | 9 | 21 | 3.5 | 7.5 | ..... |
| 27 | 1.0 | 1.7 | 2.5 | 6 | 9 | 13 | 21 | 3.5 | 15 | ..... |
| 28 | 1.7 | 1.7 | 2.5 | 7.5 | 9 | 17 | 19 | 32 | 9 | ..... |
| 29 | 1.7 | 1.7 | 2.5 | 7.5 | ..... | 17 | 15 | 13 | 7.5 | ..... |
| 30 | 1.7 | 1.7 | 2.5 | 7.5 | ..... | 23 | 15 | 11 | 7.5 | ..... |
| 31 | 1.7 | ..... | 2.5 | 7.5 | ..... | 25 | ..... | 11 | ..... | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve.

*Monthly discharge of Big Creek near Tollhouse, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 1.7 | 0.5 | 1.07 | 66 | D. |
| November | 2.5 | 1.7 | 1.78 | 106 | D. |
| December | 3.5 | 1.7 | 2.20 | 135 | C. |
| January | 17 | 2.5 | 5.53 | 340 | C. |
| February | 21 | 4.5 | 7.59 | 422 | C. |
| March | 25 | 6 | 12.0 | 738 | B. |
| April | 32 | 13 | 17.5 | 1,040 | B. |
| May | 32 | 3.5 | 8.89 | 547 | C. |
| June | 23 | 3.5 | 7.47 | 444 | C. |
| July | ..... | ..... | [a] 2.2 | 135 | |
| August | ..... | ..... | [a] 1.6 | 98 | |
| September | ..... | ..... | [a] 1.1 | 65 | |
| The year | 32 | ..... | 5.71 | 4,140 | |

[a] Estimated by comparison with Dinkey Creek near Ockenden.

### RUSH CREEK NEAR OCKENDEN, CAL.

LOCATION.—In the SW. ¼ sec. 19, T. 10 S., R. 25 E., above highway bridge at Peterson's mill, in Sierra National Forest, 6 miles above junction with Big Creek, and about 3 miles southeast of Ockenden. Taylor Creek enters 1 mile above the gage

RECORDS AVAILABLE.—September 22, 1910, to September 30, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a cedar tree on right bank 200 feet above highway bridge. Gage washed out February 1, 1911, and replaced at a different datum June 10, 1911.

CHANNEL.—Sand; will probably shift at high water.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

ACCURACY.—Rating curve fairly well defined at low stages; results approximate.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

The following discharge measurements was made by H. J. Tompkins:
Oct. 24, 1912: Gage height, 1.80 feet; discharge, 0.6 second-foot.

*Daily gage height, in feet, and discharge, in second-feet, of Rush Creek near Ockenden, Cal., for the year ending Sept. 30, 1913.*

| Day. | October. | | July. | | August. | | September. | |
|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | 1.70 | 0.1 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | 1.75 | .4 | | | 1.7 | 0.1 | | |
| 5 | | | | | | | 1.6 | 0.1 |
| 6 | 1.8 | .6 | 1.7 | 0.1 | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | 1.8 | .6 | | | | | | |
| 10 | | | | | 1.7 | .1 | | |
| 11 | | | | | | | | |
| 12 | | | 1.6 | .1 | | | 1.6 | .1 |
| 13 | 1.7 | .1 | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | 1.6 | .1 | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | 1.6 | .1 | | |
| 21 | | | 1.7 | .1 | | | | |
| 22 | | | | | | | 1.6 | .1 |
| 23 | | | | | | | | |
| 24 | 1.8 | .6 | | | | | | |
| 25 | | | | | 1.6 | .1 | | |
| 26 | | | 1.7 | .1 | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | 1.6 | .1 |
| 29 | | | | | | | | |
| 30 | | | 1.7 | .1 | | | | |
| 31 | | | | | 1.7 | .1 | | |

## FRESNO RIVER BASIN.

### FRESNO RIVER NEAR KNOWLES, CAL.

LOCATION.—In the N. ½ sec. 15, T. 8 S., R. 20 E., at highway bridge at Fresno Crossing about 6 miles northeast of Knowles.

RECORDS AVAILABLE.—September 16, 1911, to August 14, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections fastened to alder tree on right bank, about 150 feet above bridge.

CHANNEL.—Small bowlders, gravel, and sand; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable about 400 feet below gage or by wading.

DIVERSIONS.—Water is diverted above the station for irrigation and for use in lumbering.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Fresno River near Knowles, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 15 | R. C. Rice | 0.20 | 3.9 | Oct. 31 | H. J. Tompkins | 0.40 | 9.4 |
| 15 | do | .20 | 4.3 | May 3 | E. C. Murphy | .88 | 53 |

*Daily gage height, in feet, of Fresno River near Knowles, Cal., for the year ending Sept. 30, 1913.*

[J. E. Gayman, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | −0.08 | 0.50 | 0.48 | 0.40 | 0.55 | 0.82 | 1.15 | 0.95 | 0.95 | 0.60 | 0 05 |
| 2 | − .08 | .40 | .48 | .43 | .55 | .70 | 1.23 | .92 | .98 | .58 | .00 |
| 3 | + .10 | .38 | .42 | .47 | .65 | .67 | 1.05 | .92 | .90 | .55 | − .05 |
| 4 | + .10 | .35 | .42 | .45 | .55 | .67 | .93 | .90 | .90 | .50 | − .10 |
| 5 | + .20 | .40 | .42 | .20 | .55 | .65 | .75 | .90 | .88 | .47 | − .10 |
| 6 | .18 | .43 | .42 | .20 | .52 | .68 | 1.00 | .95 | .87 | .45 | − .12 |
| 7 | .25 | .45 | .40 | .30 | .52 | .72 | .98 | 1.00 | .85 | .45 | − .20 |
| 8 | .20 | .50 | .38 | .40 | .55 | .78 | .90 | 1.00 | .83 | .42 | − .20 |
| 9 | .20 | .45 | .35 | .60 | .60 | .82 | .90 | .98 | .83 | .40 | − .18 |
| 10 | .18 | .55 | .38 | .53 | .58 | .80 | .90 | .98 | .83 | .35 | − .18 |
| 11 | .15 | .83 | .38 | .40 | .58 | .78 | .90 | .98 | .80 | .30 | − .20 |
| 12 | .10 | .60 | .40 | .45 | .58 | .72 | .90 | .95 | .80 | .25 | − .20 |
| 13 | .10 | .55 | .40 | .50 | .55 | .72 | .90 | .92 | .78 | .20 | − .20 |
| 14 | .05 | .58 | .40 | .50 | .55 | .72 | 1.00 | .92 | .78 | .18 | − .20 |
| 15 | .18 | .50 | .50 | .55 | .55 | .70 | 1.13 | .92 | .73 | .15 | ..... |
| 16 | .20 | .50 | .48 | .70 | .57 | .70 | 1.00 | .92 | .70 | .10 | ..... |
| 17 | .20 | .50 | .45 | .90 | .57 | .70 | 1.00 | .92 | .65 | .05 | ..... |
| 18 | .20 | .48 | .48 | .68 | .55 | .72 | .95 | .98 | .60 | .00 | ..... |
| 19 | .20 | .48 | .48 | .65 | .57 | .80 | .92 | 1.10 | .60 | .00 | ..... |
| 20 | .20 | .48 | .50 | .60 | .58 | .80 | .90 | 1.00 | .60 | .00 | ..... |
| 21 | .20 | .50 | .58 | .58 | .58 | .78 | .90 | 1.00 | .60 | .00 | ..... |
| 22 | .20 | .48 | .30 | .58 | .58 | .80 | .90 | 1.00 | .60 | .12 | ..... |
| 23 | .25 | .50 | .50 | .58 | .55 | .90 | 1.00 | .98 | .60 | .38 | ..... |
| 24 | .28 | .50 | .50 | .52 | .55 | .90 | .98 | .95 | .60 | .20 | ..... |
| 25 | .30 | .48 | .48 | .50 | .88 | .90 | .97 | .90 | .60 | .25 | ..... |
| 26 | .30 | .43 | .45 | .58 | .83 | .87 | .97 | .90 | .70 | .40 | ..... |
| 27 | .30 | .45 | .40 | .55 | .85 | .87 | 1.10 | .90 | 1.00 | .30 | ..... |
| 28 | .15 | .62 | .40 | .55 | .85 | .87 | 1.00 | .98 | .80 | .30 | ..... |
| 29 | .30 | .50 | .42 | .57 | ..... | .90 | .95 | 1.10 | .70 | .30 | ..... |
| 30 | .35 | .45 | .40 | .55 | ..... | .95 | .95 | 1.00 | .65 | .20 | ..... |
| 31 | .45 | ..... | .45 | .55 | ..... | 1.10 | ..... | .98 | ..... | .15 | ..... |

*Daily discharge, in second-feet, of Fresno River near Knowles, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 15 | 14 | 10 | 18 | 47 | 101 | 65 | 65 | 22 | 2.5 |
| 2 | 1.6 | 10 | 14 | 12 | 18 | 32 | 118 | 60 | 70 | 21 | 2 |
| 3 | 3 | 9.2 | 11 | 14 | 27 | 29 | 82 | 60 | 57 | 18 | 1.8 |
| 4 | 3 | 8 | 11 | 12 | 18 | 29 | 62 | 57 | 57 | 15 | 1.5 |
| 5 | 4 | 10 | 11 | 4 | 18 | 27 | 65 | 57 | 54 | 14 | 1.5 |
| 6 | 3.8 | 12 | 11 | 4 | 16 | 30 | 73 | 65 | 53 | 12 | 1.4 |
| 7 | 5 | 12 | 10 | 6 | 16 | 34 | 70 | 73 | 50 | 12 | 1.0 |
| 8 | 4 | 15 | 9.2 | 10 | 18 | 42 | 57 | 73 | 48 | 11 | 1.0 |
| 9 | 4 | 12 | 8 | 22 | 22 | 47 | 57 | 70 | 48 | 10 | 1.1 |
| 10 | 3.8 | 18 | 9.2 | 17 | 21 | 44 | 57 | 70 | 48 | 8 | 1.1 |
| 11 | 3.5 | 48 | 9.2 | 10 | 21 | 42 | 57 | 70 | 44 | 6 | 1.0 |
| 12 | 3 | 22 | 10 | 12 | 21 | 34 | 57 | 65 | 44 | 5 | 1.0 |
| 13 | 3 | 18 | 10 | 15 | 18 | 34 | 57 | 60 | 42 | 4 | 1.0 |
| 14 | 2.5 | 21 | 10 | 15 | 18 | 34 | 73 | 60 | 42 | 3.8 | 1.0 |
| 15 | 3.8 | 15 | 15 | 18 | 18 | 32 | 97 | 60 | 36 | 3.5 | ..... |
| 16 | 4 | 15 | 14 | 32 | 20 | 32 | 73 | 60 | 32 | 3 | ..... |
| 17 | 4 | 15 | 12 | 57 | 20 | 32 | 73 | 60 | 27 | 2.5 | ..... |
| 18 | 4 | 14 | 14 | 30 | 18 | 34 | 65 | 70 | 22 | 2 | ..... |
| 19 | 4 | 14 | 14 | 27 | 20 | 44 | 60 | 91 | 22 | 2 | ..... |
| 20 | 4 | 14 | 15 | 22 | 21 | 44 | 57 | 73 | 22 | 2 | ..... |
| 21 | 4 | 15 | 21 | 21 | 21 | 42 | 57 | 73 | 22 | 2 | ..... |
| 22 | 4 | 14 | 6 | 21 | 21 | 44 | 57 | 73 | 22 | 3.2 | ..... |
| 23 | 5 | 15 | 15 | 21 | 18 | 57 | 73 | 70 | 22 | 9.2 | ..... |
| 24 | 5.6 | 15 | 15 | 16 | 18 | 57 | 70 | 65 | 22 | 4 | ..... |
| 25 | 6 | 14 | 14 | 15 | 54 | 57 | 68 | 57 | 22 | 5 | ..... |
| 26 | 6 | 12 | 12 | 21 | 48 | 53 | 68 | 57 | 32 | 10 | ..... |
| 27 | 6 | 12 | 10 | 18 | 50 | 53 | 91 | 57 | 73 | 6 | ..... |
| 28 | 3.5 | 24 | 10 | 18 | 50 | 53 | 73 | 70 | 44 | 6 | ..... |
| 29 | 6 | 15 | 11 | 20 | ..... | 57 | 65 | 91 | 32 | 6 | ..... |
| 30 | 8 | 12 | 10 | 18 | ..... | 65 | 65 | 73 | 27 | 4 | ..... |
| 31 | 12 | ..... | 12 | 18 | ..... | 91 | ..... | 70 | ..... | 3.5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Fresno River near Knowles, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 12 | 1.6 | 4.38 | 269 | C. |
| November | 48 | 8 | 15.5 | 922 | B. |
| December | 21 | 6 | 11.9 | 732 | B. |
| January | 57 | 4 | 17.9 | 1,100 | B. |
| February | 54 | 16 | 23.8 | 1,320 | B. |
| March | 91 | 27 | 43.6 | 2,680 | A. |
| April | 118 | 57 | 69.9 | 4,160 | A. |
| May | 91 | 57 | 66.9 | 4,110 | A. |
| June | 73 | 22 | 40.0 | 2,380 | A. |
| July | 22 | 2 | 7.60 | 467 | B. |
| August 1–14 | 2.5 | 1 | 1.35 | 37 | C. |
| The period | ..... | ..... | ..... | 18,200 | |

## MERCED RIVER AND TRIBUTARIES.

### MERCED RIVER AT YOSEMITE, CAL.

LOCATION.—At Sentinel Bridge at Yosemite, in Yosemite National Park, 1½ miles below mouth of Tenaya Creek, and half a mile above mouth of Yosemite Creek.

RECORDS AVAILABLE.—July, 1904, to June, 1909 (incomplete) and January, 4 1912, to September 30, 1913.

DRAINAGE AREA.—236 square miles.

GAGE.—Vertical staff on retaining wall on left bank 3 feet below the bridge.

CHANNEL.—Small bowlders and gravel; shifts slightly during high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation slightly affected by ice.

ACCURACY.—Results good.

COOPERATION.—Gage-height record furnished by officials of Yosemite National Park.

*Discharge measurements of Merced River at Yosemite, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 17 | R. C. Rice | 2.34 | 19 | June 6 | E. C. Murphy | 5.59 | 1,440 |
| Feb. 3 | Lasley Lee | 2.57 | 41 | 6 | do | 5.34 | 1,330 |
| Mar. 4 | D. A. Sherfey[a] | 2.58 | 46 | | | | |

[a] Resident engineer, Yosemite National Park.

*Daily gage height, in feet, of Merced River at Yosemite, Cal., for the year ending Sept. 30, 1913.*

[H. C. Currier, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.40 | 2.32 | 2.42 | 2.35 | 2.58 | 2.50 | 3.8 | 3.85 | 5.0 | 4.0 | 3.40 | 4.15 |
| 2 | 2.40 | 2.32 | 2.42 | 2.35 | 2.57 | 2.54 | 3.5 | 3.6 | 5.0 | 3.95 | 3.40 | 3.65 |
| 3 | 2.40 | 2.35 | 2.40 | ..... | 2.57 | 2.57 | 3.30 | 3.65 | 4.9 | 3.9 | 3.32 | 3.5 |
| 4 | 2.43 | 2.36 | 2.40 | ..... | 2.56 | 2.59 | 3.20 | 4.0 | 4.9 | 3.9 | 3.32 | 3.26 |
| 5 | 2.44 | 2.37 | 2.39 | ..... | 2.55 | 2.62 | 3.40 | 4.5 | 5.1 | 3.85 | 3.08 | 3.14 |
| 6 | 2.46 | 2.40 | 2.39 | ..... | 2.54 | 2.68 | 3.20 | 5.1 | 5.4 | 3.8 | 3.08 | 3.10 |
| 7 | 2.46 | 2.59 | 2.40 | ..... | 2.55 | 2.75 | 3.15 | 5.2 | 4.9 | 3.75 | 3.00 | 3.06 |
| 8 | 2.45 | 2.57 | 2.40 | ..... | 2.55 | 2.80 | 3.12 | 5.1 | 5.0 | 3.7 | 3.10 | 2.90 |
| 9 | 2.45 | 2.52 | 2.38 | ..... | 2.55 | 2.83 | 3.18 | 5.2 | 4.7 | 3.6 | 3.00 | 2.88 |
| 10 | 2.45 | 2.70 | 2.35 | ..... | 2.55 | 2.90 | 3.37 | 5.2 | 4.4 | 3.55 | 3.00 | 2.80 |
| 11 | 2.42 | 2.70 | 2.32 | ..... | 2.54 | 2.90 | 3.6 | 5.2 | 4.15 | 3.40 | 3.00 | 2.73 |
| 12 | 2.41 | 2.70 | 2.32 | ..... | 2.52 | 2.83 | 3.6 | 4.6 | 4.5 | 3.39 | 3.00 | 2.75 |
| 13 | 2.39 | 2.67 | 2.32 | ..... | 2.52 | 2.79 | 3.6 | 4.6 | 4.6 | 3.30 | 2.90 | 2.76 |
| 14 | 2.37 | 2.64 | 2.32 | ..... | 2.53 | 2.70 | 3.6 | 4.5 | 4.7 | 3.21 | 2.90 | 2.77 |
| 15 | 2.36 | 2.63 | 2.38 | ..... | 2.60 | 2.68 | 3.40 | 4.8 | 4.9 | 3.17 | 2.90 | 2.79 |
| 16 | 2.36 | 2.60 | 2.38 | ..... | 2.65 | 2.70 | 3.30 | 4.9 | 4.3 | 3.08 | 2.90 | 2.78 |
| 17 | 2.34 | 2.69 | 2.40 | ..... | 2.70 | 2.73 | 3.29 | 6.1 | 4.25 | 3.00 | 2.90 | 2.70 |
| 18 | 2.32 | 2.61 | 2.40 | ..... | 2.65 | 2.72 | 3.29 | 6.4 | 4.15 | 3.00 | 2.70 | 2.69 |
| 19 | 2.30 | 2.61 | 2.38 | ..... | 2.60 | 2.80 | 3.29 | 5.0 | 4.0 | 2.95 | 2.70 | 2.66 |
| 20 | 2.30 | 2.60 | 2.38 | ..... | 2.60 | 2.77 | 3.29 | 5.0 | 3.85 | 2.95 | 2.70 | 2.65 |
| 21 | 2.30 | 2.57 | 2.38 | ..... | 2.58 | 2.77 | 3.29 | 5.2 | 3.85 | 3.20 | 3.20 | 2.65 |
| 22 | 2.30 | 2.55 | 2.38 | ..... | 2.56 | 2.80 | 3.45 | 5.5 | 4.0 | 3.7 | 3.20 | 2.64 |
| 23 | 2.29 | 2.58 | 2.38 | ..... | 2.51 | 2.70 | 3.8 | 5.4 | 4.1 | 4.1 | 3.5 | 2.62 |
| 24 | 2.29 | 2.50 | 2.38 | ..... | 2.58 | 2.70 | 4.0 | 5.6 | 4.9 | 4.2 | 3.5 | 2.61 |
| 25 | 2.29 | 2.50 | 2.38 | ..... | 2.57 | 2.68 | 4.5 | 5.8 | 4.2 | 4.0 | 3.85 | 2.58 |
| 26 | 2.29 | 2.50 | 2.38 | ..... | 2.51 | 2.62 | 4.9 | 6.5 | 4.0 | 4.0 | 3.85 | 2.57 |
| 27 | 2.29 | 2.50 | 2.38 | ..... | 2.51 | 2.69 | 5.0 | 5.7 | 3.95 | 4.0 | 4.0 | 2.52 |
| 28 | 2.30 | 2.50 | 2.38 | ..... | 2.50 | 2.82 | 4.5 | 6.2 | 3.85 | 3.6 | 4.35 | 2.48 |
| 29 | 2.32 | 2.50 | 2.38 | ..... | ..... | 2.90 | 4.3 | 5.2 | 3.8 | 3.6 | 4.0 | 2.46 |
| 30 | 2.32 | 2.50 | 2.38 | 2.58 | ..... | 3.10 | 4.3 | 5.1 | 3.75 | 3.6 | 4.5 | 2.44 |
| 31 | 2.32 | ..... | 2.38 | 2.58 | ..... | 3.6 | ..... | 5.0 | ..... | 3.6 | 4.9 | ..... |

*Daily discharge, in second-feet, of Merced River at Yosemite, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 17 | 25 | 20 | 43 | 33 | 460 | 484 | 1,080 | 556 | 288 | 629 |
| 2 | 23 | 17 | 25 | 20 | 42 | 38 | 328 | 370 | 1,080 | 532 | 288 | 392 |
| 3 | 23 | 20 | 23 | ..... | 42 | 42 | 250 | 392 | 1,020 | 508 | 258 | 328 |
| 4 | 26 | 20 | 23 | ..... | 41 | 45 | 214 | 556 | 1,020 | 508 | 258 | 236 |
| 5 | 27 | 21 | 22 | ..... | 40 | 50 | 288 | 808 | 1,140 | 484 | 174 | 194 |
| 6 | 29 | 23 | 22 | ..... | 38 | 60 | 214 | 1,140 | 1,330 | 460 | 174 | 180 |
| 7 | 29 | 45 | 23 | ..... | 40 | 76 | 197 | 1,200 | 1,020 | 437 | 148 | 167 |
| 8 | 28 | 42 | 23 | ..... | 40 | 88 | 187 | 1,140 | 1,080 | 414 | 180 | 116 |
| 29 | 28 | 36 | 22 | ..... | 40 | 96 | 207 | 1,200 | 916 | 370 | 148 | 110 |
| 10 | 28 | 64 | 20 | ..... | 40 | 116 | 277 | 1,200 | 756 | 349 | 148 | 88 |
| 11 | 25 | 64 | 17 | ..... | 38 | 116 | 370 | 1,200 | 629 | 288 | 148 | 71 |
| 12 | 24 | 64 | 17 | ..... | 36 | 96 | 370 | 862 | 808 | 284 | 148 | 76 |
| 13 | 22 | 59 | 17 | ..... | 36 | 86 | 370 | 862 | 862 | 250 | 116 | 78 |
| 14 | 21 | 53 | 17 | ..... | 37 | 64 | 370 | 808 | 916 | 218 | 116 | 81 |
| 15 | 20 | 51 | 22 | ..... | 46 | 60 | 288 | 970 | 1,020 | 204 | 116 | 86 |
| 16 | 20 | 46 | 22 | ..... | 55 | 64 | 250 | 1,020 | 704 | 174 | 116 | 83 |
| 17 | 19 | 62 | 23 | ..... | 64 | 71 | 246 | 1,800 | 679 | 148 | 116 | 64 |
| 18 | 17 | 48 | 23 | ..... | 55 | 69 | 246 | 2,010 | 629 | 148 | 64 | 62 |
| 19 | 16 | 48 | 22 | ..... | 46 | 88 | 246 | 1,080 | 556 | 132 | 64 | 57 |
| 20 | 16 | 46 | 22 | ..... | 46 | 81 | 246 | 1,080 | 484 | 132 | 64 | 55 |
| 21 | 16 | 42 | 22 | ..... | 43 | 81 | 246 | 1,200 | 484 | 214 | 214 | 55 |
| 22 | 16 | 40 | 22 | ..... | 41 | 88 | 308 | 1,400 | 556 | 414 | 214 | 53 |
| 23 | 16 | 43 | 22 | ..... | 34 | 64 | 460 | 1,330 | 604 | 604 | 328 | 50 |
| 24 | 16 | 33 | 22 | ..... | 43 | 64 | 556 | 1,460 | 1,020 | 654 | 328 | 48 |
| 25 | 16 | 33 | 22 | ..... | 42 | 60 | 808 | 1,590 | 654 | 556 | 484 | 43 |
| 26 | 16 | 33 | 22 | ..... | 34 | 50 | 1,020 | 2,080 | 556 | 556 | 484 | 42 |
| 27 | 16 | 33 | 22 | ..... | 34 | 62 | 1,080 | 1,520 | 532 | 556 | 556 | 36 |
| 28 | 16 | 33 | 22 | ..... | 33 | 94 | 808 | 1,870 | 484 | 370 | 730 | 31 |
| 29 | 17 | 33 | 22 | ..... | ..... | 116 | 704 | 1,200 | 460 | 370 | 556 | 29 |
| 30 | 17 | 33 | 22 | 43 | ..... | 180 | 704 | 1,140 | 437 | 370 | 808 | 27 |
| 31 | 17 | ..... | 22 | 43 | ..... | 370 | ..... | 1,080 | ..... | 370 | 1,020 | ..... |

NOTE.—Discharge determined from a rating curve well defined above 40 second-feet. Stream frozen over Jan. 3–29, 1913; mean discharge Jan. 3–15 estimated as 20 second-feet; Jan. 16–29 estimated as 30 second-feet.

*Monthly discharge of Merced River at Yosemite, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 236 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 29 | 16 | 20.7 | 0.088 | 0.10 | 1,270 | C. |
| November | 64 | 17 | 40.1 | .170 | .19 | 2,390 | B. |
| December | 25 | 17 | 21.7 | .092 | .11 | 1,330 | C. |
| January | ..... | ..... | 26.0 | .110 | .13 | 1,600 | |
| February | 64 | 33 | 41.8 | .177 | .18 | 2,320 | A. |
| March | 370 | 33 | 86.1 | .365 | .42 | 5,290 | A. |
| April | 1,080 | 187 | 411 | 1.74 | 1.94 | 24,500 | A. |
| May | 2,080 | 370 | 1,160 | 4.92 | 5.67 | 71,300 | A. |
| June | 1,330 | 437 | 784 | 3.32 | 3.70 | 46,700 | A. |
| July | 654 | 132 | 375 | 1.59 | 1.83 | 23,100 | A. |
| August | 1,020 | 64 | 286 | 1.21 | 1.40 | 17,600 | A. |
| September | 629 | 27 | 119 | .504 | .56 | 7,080 | A. |
| The year | 2,080 | ..... | 282 | 1.19 | 16.23 | 204,000 | |

### MERCED RIVER NEAR MERCED FALLS, CAL.

LOCATION.—In the NW. ¼ sec. 11, T. 5 S., R. 15 E., near mouth of canyon, about 2 miles above dam at Merced Falls.

RECORDS AVAILABLE.—April 6, 1901, to September 30, 1913.

DRAINAGE AREA.—1,090 square miles.

GAGE.—Staff in five sections on right bank.

CHANNEL.—Gravel; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from car and cable at gage or by wading.

REGULATION.—Flow somewhat affected by regulation for power development several miles above the station.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Merced River near Merced Falls, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 19 | R. C. Rice | 7.95 | 56 | Apr. 26 | E. C. Murphy | 11.56 | 2,710 |
| Dec. 3 | J. E. Stewart | 7.96 | 60 | June 4 | do | 11.22 | 2,180 |
| Mar. 8 | E. C. Murphy | 8.91 | 297 | | | | |

*Daily gage height, in feet, of Merced River near Merced Falls, Cal., for the year ended Sept. 30, 1913.*

[C. Kelsey, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.05 | 8.02 | 8.22 | 8.05 | 8.6 | 8.6 | 10.3 | 10.5 | 11.2 | 9.85 | 9.55 | 10.6 |
| 2 | 8.02 | 8.05 | 8.25 | 8.08 | 8.6 | 8.55 | 10.5 | 10.35 | 11.3 | 9.75 | 9.25 | 10.05 |
| 3 | 7.77 | 8.07 | 8.06 | 8.00 | 8.6 | 8.6 | 10.15 | 10.3 | 11.3 | 9.7 | 9.15 | 9.6 |
| 4 | 7.65 | 7.82 | 8.30 | 7.98 | 8.55 | 8.7 | 9.95 | 10.5 | 11.2 | 9.7 | 9.05 | 9.25 |
| 5 | 7.89 | 8.07 | 8.05 | 8.10 | 8.6 | 8.7 | 9.9 | 11.1 | 11.2 | 9.65 | 9.0 | 9.1 |
| 6 | 7.92 | 8.07 | 8.05 | 8.02 | 8.46 | 8.7 | 10.05 | 11.5 | 11.6 | 9.6 | 8.9 | 8.95 |
| 7 | 8.05 | 8.05 | 8.05 | 7.95 | 8.55 | 8.8 | 9.8 | 11.7 | 11.3 | 9.65 | 8.7 | 8.85 |
| 8 | 7.95 | 7.99 | 8.05 | 7.95 | 8.55 | 8.9 | 9.7 | 11.6 | 11.2 | 9.65 | 8.75 | 8.75 |
| 9 | 8.07 | 8.32 | 7.85 | 7.95 | 8.6 | 9.0 | 9.7 | 11.6 | 10.9 | 9.6 | 8.8 | 8.75 |
| 10 | 7.99 | 8.37 | 7.90 | 8.05 | 8.75 | 9.1 | 9.85 | 11.6 | 11.0 | 9.5 | 9.0 | 8.55 |
| 11 | 7.97 | 8.8 | 8.10 | 8.15 | 8.6 | 9.15 | 10.15 | 11.6 | 10.7 | 9.4 | 9.0 | 8.48 |
| 12 | 7.97 | 8.65 | 7.90 | 8.10 | 8.55 | 9.1 | 10.3 | 11.4 | 10.6 | 9.3 | 8.9 | 8.40 |
| 13 | 8.07 | 8.49 | 8.00 | 8.02 | 8.6 | 9.0 | 10.3 | 11.2 | 10.7 | 9.2 | 8.85 | 8.40 |
| 14 | 7.99 | 8.49 | 8.05 | 8.05 | 8.55 | 9.0 | 10.45 | 11.1 | 10.7 | 9.2 | 8.7 | 8.38 |
| 15 | 7.99 | 8.47 | 8.10 | 8.25 | 8.6 | 8.9 | 10.25 | 11.2 | 10.6 | 9.1 | 8.6 | 8.40 |
| 16 | 8.02 | 8.45 | 8.28 | 9.65 | 8.5 | 8.8 | 10.05 | 11.4 | 10.6 | 9.0 | 8.5 | 8.40 |
| 17 | 8.19 | 8.37 | 8.25 | 9.4 | 8.7 | 8.8 | 10.0 | 11.7 | 10.4 | 8.9 | 8.5 | 8.35 |
| 18 | 8.19 | 8.37 | 8.30 | 8.55 | 8.75 | 8.85 | 10.0 | 11.7 | 10.25 | 8.8 | 8.42 | 8.35 |
| 19 | 7.95 | 8.37 | 8.28 | 9.2 | 8.8 | 9.1 | 10.0 | 11.8 | 10.2 | 8.75 | 8.6 | 8.25 |
| 20 | 8.02 | 8.42 | 8.12 | 8.35 | 8.7 | 9.1 | 9.9 | 11.5 | 10.05 | 8.7 | 8.10 | 8.20 |
| 21 | 7.77 | 8.37 | 8.02 | 8.65 | 8.6 | 9.0 | 10.0 | 11.5 | 9.95 | 8.7 | 8.30 | 8.20 |
| 22 | 8.07 | 8.37 | 8.15 | 8.55 | 8.55 | 9.05 | 10.15 | 11.6 | 10.05 | 8.75 | 8.20 | 8.20 |
| 23 | 7.97 | 8.37 | 8.00 | 8.40 | 8.5 | 9.4 | 10.5 | 11.9 | 10.05 | 9.45 | 8.5 | 8.05 |
| 24 | 7.92 | 8.29 | 7.98 | 8.45 | 8.55 | 9.3 | 10.9 | 11.8 | 9.9 | 9.9 | 8.85 | 8.00 |
| 25 | 8.02 | 8.29 | 8.20 | 8.35 | 8.65 | 9.35 | 11.2 | 11.7 | 9.95 | 9.8 | 9.05 | 8.05 |
| 26 | 8.02 | 8.35 | 8.10 | 8.45 | 8.75 | 9.25 | 11.4 | 11.7 | 9.9 | 9.8 | 9.4 | 8.30 |
| 27 | 7.92 | 8.07 | 8.15 | 8.6 | 8.65 | 9.25 | 11.5 | 11.8 | 9.8 | 9.9 | 9.3 | 7.75 |
| 28 | 7.42 | 8.25 | 8.05 | 8.55 | 8.7 | 9.3 | 11.3 | 11.8 | 10.25 | 9.75 | 9.75 | 8.10 |
| 29 | 8.07 | 8.22 | 8.00 | 8.6 | ..... | 9.4 | 11.1 | 11.6 | 10.15 | 9.6 | 9.9 | 8.10 |
| 30 | 8.02 | 8.19 | 8.00 | 8.6 | ..... | 9.45 | 10.8 | 11.4 | 10.05 | 10.1 | 9.8 | 8.20 |
| 31 | 7.95 | ..... | 8.02 | 8.6 | ..... | 9.9 | ..... | 11.2 | ..... | 9.9 | 10.8 | ..... |

*Daily discharge, in second-feet, of Merced River near Merced Falls, Cal., for the year ended Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 80 | 74 | 114 | 80 | 204 | 204 | 1,150 | 1,330 | 2,080 | 775 | 588 | 1,430 |
| 2 | 74 | 80 | 121 | 86 | 204 | 191 | 1,330 | 1,200 | 2,210 | 708 | 439 | 932 |
| 3 | 32 | 84 | 82 | 70 | 204 | 204 | 1,020 | 1,150 | 2,210 | 675 | 394 | 615 |
| 4 | 20 | 39 | 132 | 66 | 191 | 232 | 850 | 1,330 | 2,080 | 675 | 354 | 439 |
| 5 | 50 | 84 | 80 | 90 | 204 | 232 | 810 | 1,960 | 2,080 | 645 | 334 | 373 |
| 6 | 56 | 84 | 80 | 74 | 168 | 232 | 932 | 2,500 | 2,650 | 615 | 298 | 316 |
| 7 | 80 | 80 | 80 | 61 | 191 | 264 | 740 | 2,810 | 2,210 | 645 | 232 | 281 |
| 8 | 61 | 68 | 80 | 61 | 191 | 298 | 675 | 2,650 | 2,080 | 645 | 248 | 248 |
| 9 | 84 | 114 | 44 | 61 | 304 | 334 | 675 | 2,650 | 1,740 | 615 | 264 | 248 |
| 10 | 68 | 147 | 52 | 80 | 248 | 373 | 775 | 2,650 | 1,850 | 560 | 334 | 191 |
| 11 | 65 | 264 | 90 | 100 | 204 | 394 | 1,020 | 2,650 | 1,530 | 510 | 334 | 173 |
| 12 | 65 | 218 | 32 | 90 | 191 | 373 | 1,150 | 2,350 | 1,430 | 462 | 298 | 154 |
| 13 | 84 | 176 | 70 | 74 | 204 | 334 | 1,150 | 2,080 | 1,530 | 416 | 281 | 154 |
| 14 | 68 | 176 | 80 | 80 | 191 | 334 | 1,280 | 1,960 | 1,530 | 416 | 232 | 150 |
| 15 | 68 | 171 | 90 | 121 | 204 | 298 | 1,100 | 2,080 | 1,430 | 373 | 204 | 154 |
| 16 | 74 | 166 | 128 | 645 | 178 | 264 | 932 | 2,350 | 1,430 | 334 | 178 | 154 |
| 17 | 108 | 147 | 121 | 510 | 232 | 264 | 890 | 2,810 | 1,240 | 298 | 178 | 143 |
| 18 | 108 | 147 | 132 | 191 | 248 | 281 | 890 | 2,810 | 1,100 | 264 | 159 | 143 |
| 19 | 61 | 147 | 128 | 416 | 264 | 373 | 890 | 2,970 | 1,060 | 248 | 204 | 121 |
| 20 | 74 | 159 | 94 | 143 | 232 | 373 | 810 | 2,500 | 932 | 232 | 90 | 110 |
| 21 | 32 | 147 | 74 | 218 | 204 | 334 | 890 | 2,500 | 850 | 232 | 132 | 110 |
| 22 | 84 | 147 | 100 | 191 | 191 | 354 | 1,020 | 2,650 | 932 | 248 | 110 | 110 |
| 23 | 65 | 147 | 70 | 154 | 178 | 510 | 1,330 | 3,130 | 932 | 535 | 178 | 80 |
| 24 | 56 | 130 | 66 | 166 | 191 | 462 | 1,740 | 2,970 | 810 | 810 | 281 | 70 |
| 25 | 74 | 130 | 110 | 143 | 218 | 486 | 2,080 | 2,810 | 850 | 740 | 354 | 80 |
| 26 | 74 | 143 | 90 | 166 | 248 | 439 | 2,350 | 2,810 | 810 | 740 | 510 | 132 |
| 27 | 56 | 84 | 100 | 204 | 218 | 439 | 2,500 | 2,970 | 740 | 810 | 462 | 30 |
| 28 | 8.6 | 121 | 80 | 191 | 232 | 462 | 2,210 | 2,970 | 1,100 | 708 | 708 | 90 |
| 29 | 84 | 114 | 70 | 204 | ..... | 510 | 1,960 | 2,650 | 1,020 | 615 | 810 | 90 |
| 30 | 74 | 108 | 70 | 204 | ..... | 535 | 1,630 | 2,350 | 932 | 975 | 740 | 110 |
| 31 | 61 | ..... | 74 | 204 | ..... | 810 | ..... | 2,080 | ..... | 810 | 1,630 | ..... |

NOTE.—Discharge determined from a curve well defined above 40 second-feet.

*Monthly discharge of Merced River near Merced Falls, Cal., for the year ended Sept. 30, 1913.*

[Drainage area, 1,090 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 108 | 8.6 | 66.1 | 0.061 | 0.07 | 4,060 | A. |
| November | 264 | 39 | 130 | .119 | .13 | 7,740 | A. |
| December | 132 | 44 | 88.8 | .081 | .09 | 5,460 | A. |
| January | 645 | 61 | 166 | .152 | .18 | 10,200 | A |
| February | 264 | 168 | 208 | .191 | .20 | 11,600 | A. |
| March | 810 | 191 | 361 | .331 | .38 | 22,200 | A. |
| April | 2,500 | 675 | 1,230 | 1.13 | 1.26 | 73,200 | A. |
| May | 3,130 | 1,150 | 2,410 | 2.21 | 2.55 | 148,000 | A. |
| June | 2,650 | 740 | 1,450 | 1.33 | 1.48 | 86,300 | A. |
| July | 975 | 232 | 559 | .513 | .59 | 34,400 | A. |
| August | 1,630 | 90 | 373 | .342 | .39 | 22,900 | A. |
| September | 1,430 | 30 | 248 | .228 | .25 | 14,800 | A. |
| The year | 3,130 | 8.6 | 608 | .558 | 7.57 | 441,000 | |

### TENAYA CREEK NEAR YOSEMITE, CAL.

LOCATION.—At Tenaya Bridge in Yosemite National Park, 1⅞ miles east of Yosemite, five-eighths mile below outlet of Mirror Lake, and five-eighths mile above junction with Merced River.

RECORDS AVAILABLE.—July, 1904, to June, 1909 (incomplete), and January 5, 1912, to September 30, 1913.

DRAINAGE AREA.—47 square miles.

GAGE.—Vertical staff fastened to left abutment of bridge near upstream end. This gage was removed about December 1, 1912, when bridge was repaired. New vertical staff was fastened to left abutment near downstream end on February 4, 1915. Original datum not maintained as bench mark was destroyed.

CHANNEL.—Small bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation probably somewhat affected by ice.

ACCURACY.—Results good.

COOPERATION.—Gage-height record furnished by officials of Yosemite National Park.

*Discharge measurements of Tenaya Creek near Yosemite, Cal., during the years ending Sept. 30, 1913–1915.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| 1912–13 | | *Feet.* | *Sec.-ft.* | 1914–15 | | *Feet.* | *Sec.-ft.* |
| Oct. 18 | R. C. Rice | 3.33 | 1.7 | Nov. 6 | H. J. Tompkins | 1.50 | 7.8 |
| Feb. 4 | Lasley Lee | 2.11 | 9.7 | Mar. 26 | Charles Leidl | 2.91 | 130 |
| Mar. 8 | D. A. Sherfey [a] | 2.26 | 30 | 27 | do | 2.78 | 110 |
| June 6 | E. C. Murphy | 3.82 | 360 | June 19 | C. J. Emerson | 3.88 | 383 |
| 1913–14 | | | | July 3 | C. P. Firestone | 3.20 | 205 |
| May 10 | H. J. Tompkins | 4.21 | 497 | 24 | H. D. McGlashan | 2.29 | 55 |
| 14 | do | 4.70 | 652 | Aug. 20 | Charles Leidl | 1.37 | 4.3 |

[a] Resident engineer, Yosemite National Park.

NOTE.—From Feb. 4, 1913, new gage used.

*Daily gage height, in feet, of Tenaya Creek near Yosemite, Cal., for the year ending Sept. 30, 1913.*

[H. C. Currier, observer.]

| Day. | Oct. | Nov. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.20 | 3.40 | ..... | 1.95 | 3.2 | 3.0 | 3.8 | 2.23 | ..... | ..... |
| 2 | 3.20 | 3.40 | ..... | 1.95 | 3.0 | 3.0 | 3.8 | 2.23 | 2.10 | 2.30 |
| 3 | 3.20 | 3.42 | ..... | 1.98 | 2.80 | 3.0 | 3.4 | 2.15 | 2.00 | 2.30 |
| 4 | 3.28 | 3.42 | 2.11 | 1.98 | ..... | 3.5 | 3.4 | 2.15 | 1.88 | 2.00 |
| 5 | 3.28 | 3.42 | ..... | 2.02 | 2.90 | 3.5 | 3.55 | 2.03 | 1.78 | 2.00 |
| 6 | 3.29 | 3.78 | 2.10 | 2.02 | 2.70 | 3.8 | 3.7 | 2.03 | 1.78 | 1.87 |
| 7 | 3.30 | 3.78 | 2.10 | 2.20 | 2.62 | 3.8 | 3.7 | 2.03 | 1.70 | 1.80 |
| 8 | 3.30 | 3.63 | 2.10 | 2.20 | 2.65 | 3.8 | 3.75 | 1.95 | 1.70 | 1.75 |
| 9 | 3.30 | 3.63 | 2.12 | 2.38 | 2.65 | 3.8 | 3.75 | 1.95 | 1.65 | 1.75 |
| 10 | 3.30 | 3.70 | 2.12 | 2.38 | 2.80 | 3.7 | 3.4 | 1.93 | 1.65 | 1.70 |
| 11 | 3.30 | 3.70 | 2.12 | 2.38 | 3.0 | 3.7 | 3.4 | 1.82 | 1.90 | 1.70 |
| 12 | 3.30 | 3.75 | 2.12 | 3.0 | 3.1 | 3.5 | 3.0 | 1.82 | ..... | 1.73 |
| 13 | 3.30 | 3.75 | 2.12 | 2.50 | 3.1 | 3.5 | 3.0 | 1.70 | ..... | 1.73 |
| 14 | 3.30 | 3.72 | 2.15 | 2.18 | 2.90 | 3.65 | 3.0 | 1.70 | ..... | 1.60 |
| 15 | 3.30 | 3.69 | 2.15 | 2.08 | 2.80 | 3.65 | 2.92 | 1.60 | ..... | 1.60 |
| 16 | 3.30 | 3.75 | 2.08 | 2.12 | 2.71 | 3.8 | 2.80 | 1.60 | ..... | 1.60 |
| 17 | 3.30 | 3.82 | 2.08 | 2.12 | 2.71 | 3.8 | 2.80 | 1.60 | ..... | 1.60 |
| 18 | 3.33 | 3.75 | 2.02 | 2.20 | 2.60 | 4.0 | 2.75 | 1.60 | ..... | 1.55 |
| 19 | 3.32 | 3.75 | 2.02 | 2.20 | 2.60 | 4.0 | 2.75 | 1.60 | ..... | 1.52 |
| 20 | 3.32 | 3.65 | 1.98 | 2.18 | 2.62 | 3.9 | 2.50 | 1.60 | ..... | 1.52 |
| 21 | 3.32 | 3.65 | 1.98 | 2.18 | 2.62 | 3.9 | 2.50 | 1.72 | ..... | 1.48 |
| 23 | 3.32 | 3.62 | 1.92 | 2.12 | 3.0 | 4.0 | 2.50 | 1.72 | ..... | 1.48 |
| 23 | 3.32 | 3.62 | 1.92 | 2.12 | 3.2 | 4.0 | 2.50 | 1.85 | ..... | 1.48 |
| 24 | 3.35 | 3.60 | 1.95 | 2.10 | 3.35 | 4.3 | 2.38 | 1.85 | 2.70 | 1.45 |
| 25 | 3.37 | 3.60 | 1.95 | 2.10 | 3.5 | 4.3 | 2.38 | 2.00 | 2.70 | 1.45 |
| 26 | 3.37 | 3.60 | 1.98 | 2.15 | 3.65 | 4.3 | 2.80 | 2.00 | 2.95 | 1.45 |
| 27 | 3.38 | ..... | 1.98 | 2.15 | 3.8 | 4.25 | 2.80 | 2.40 | 2.95 | 1.40 |
| 28 | 3.40 | ..... | 1.95 | 2.32 | 3.4 | 4.0 | 2.52 | 2.40 | ..... | 1.40 |
| 29 | 3.42 | ..... | ..... | 2.32 | 3.4 | 4.0 | 2.52 | 2.28 | ..... | 1.40 |
| 30 | 3.42 | ..... | ..... | 2.98 | 3.2 | 3.95 | 2.52 | 2.20 | ..... | 1.40 |
| 31 | 3.42 | ..... | ..... | 2.98 | ..... | 3.95 | ..... | 2.20 | ..... | ..... |

NOTE.—October and November, old gage was read.

*Daily discharge, in second-feet, of Tenaya Creek near Yosemite, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 6.0 | 12 | 3.5 | 188 | 142 | 360 | 49 | 42 | 55 |
| 2 | 1.0 | 6.0 | 11 | 3.5 | 142 | 142 | 360 | 49 | 38 | 55 |
| 3 | 1.0 | 7.0 | 11 | 4.4 | 104 | 142 | 246 | 42 | 31 | 55 |
| 4 | 1.4 | 7.0 | 11 | 4.4 | 113 | 270 | 246 | 42 | 24 | 31 |
| 5 | 1.4 | 7.0 | 10 | 6.0 | 122 | 270 | 286 | 33 | 19 | 31 |
| 6 | 1.4 | 28 | 10 | 6.0 | 86 | 360 | 330 | 33 | 19 | 24 |
| 7 | 1.5 | 28 | 10 | 18 | 73 | 360 | 330 | 33 | 16 | 20 |
| 8 | 1.5 | 18 | 10 | 18 | 78 | 360 | 345 | 28 | 16 | 18 |
| 9 | 1.5 | 18 | 12 | 38 | 78 | 360 | 345 | 28 | 14 | 18 |
| 10 | 1.5 | 22 | 12 | 38 | 104 | 330 | 246 | 27 | 14 | 16 |
| 11 | 1.5 | 22 | 12 | 38 | 142 | 330 | 246 | 21 | 25 | 16 |
| 12 | 1.5 | 26 | 12 | 142 | 164 | 270 | 151 | 21 | ..... | 17 |
| 13 | 1.5 | 26 | 12 | 54 | 164 | 270 | 151 | 16 | ..... | 17 |
| 14 | 1.5 | 23 | 14 | 16 | 122 | 315 | 151 | 16 | ..... | 12 |
| 15 | 1.5 | 21 | 14 | 9.0 | 104 | 315 | 135 | 12 | ..... | 12 |
| 16 | 1.5 | 26 | 9.0 | 12 | 88 | 360 | 113 | 12 | ..... | 12 |
| 17 | 1.5 | 31 | 9.0 | 12 | 88 | 360 | 113 | 12 | ..... | 12 |
| 18 | 2.8 | 26 | 6.0 | 18 | 70 | 420 | 106 | 12 | ..... | 10 |
| 19 | 2.4 | 26 | 6.0 | 18 | 70 | 420 | 106 | 12 | ..... | 8.8 |
| 20 | 2.4 | 19 | 4.4 | 16 | 73 | 390 | 74 | 12 | ..... | 8.8 |
| 21 | 2.4 | 12 | 4.4 | 16 | 73 | 390 | 74 | 17 | ..... | 7.4 |
| 22 | 2.4 | 17 | 2.6 | 12 | 142 | 420 | 74 | 17 | ..... | 7.4 |
| 23 | 2.4 | 17 | 2.6 | 12 | 188 | 420 | 74 | 22 | ..... | 7.4 |
| 24 | 3.8 | 16 | 3.5 | 10 | 228 | 520 | 62 | 22 | 98 | 6.5 |
| 25 | 4.6 | 16 | 3.5 | 10 | 270 | 520 | 62 | 31 | 98 | 6.5 |
| 26 | 4.6 | 16 | 4.4 | 14 | 315 | 520 | 113 | 31 | 141 | 6.5 |
| 27 | 5.1 | 14 | 4.4 | 14 | 360 | 502 | 113 | 64 | 141 | 5.0 |
| 28 | 6.0 | 17 | 3.5 | 30 | 242 | 420 | 76 | 64 | ..... | 5.0 |
| 29 | 7.0 | 17 | ..... | 30 | 242 | 420 | 76 | 53 | ..... | 5.0 |
| 30 | 7.0 | 14 | ..... | 138 | 188 | 405 | 76 | 46 | ..... | 5.0 |
| 31 | 7.0 | ..... | ..... | 138 | ..... | 405 | ..... | 46 | ..... | ..... |

NOTE.—Discharge determined from three rating curves as follows: Well defined Oct. 1 to Nov. 30, 1912; fairly well defined Feb. 4 to May 23, 1913; well defined May 24 to Sept. 30, 1913. Discharge for days for which gage heights are not recorded, estimated by comparison with that of Yosemite Creek and Merced River at Yosemite; mean discharge for August estimated as 41 second-feet.

*Monthly discharge of Tenaya Creek near Yosemite, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 47 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 7 | 1 | 2.70 | 0.057 | 0.07 | 166 | C. |
| November | 31 | 6 | 18.5 | .394 | .44 | 1,100 | B. |
| February | 14 | 2.6 | 8.44 | .180 | .19 | 469 | C. |
| March | 142 | 3.5 | 29.0 | .617 | .71 | 1,780 | C. |
| April | 360 | 70 | 147 | 3.13 | 3.49 | 8,750 | B. |
| May | 520 | 142 | 359 | 7.64 | 8.81 | 22,100 | A. |
| June | 360 | 62 | 175 | 3.72 | 4.15 | 10,400 | A. |
| July | 64 | 12 | 29.8 | .634 | .73 | 1,830 | B. |
| August | ..... | ..... | 41 | .872 | 1.01 | 2,520 | |
| September | ..... | 5 | 17.0 | .362 | .40 | 1,010 | B. |

### YOSEMITE CREEK AT YOSEMITE, CAL.

LOCATION.—At highway bridge one-fourth mile northwest of Yosemite, in Yosemite National Park, and half a mile above junction with Merced River.

RECORDS AVAILABLE.—July, 1904, to June, 1909 (incomplete) and January 4, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a cottonwood tree on right bank 25 feet above bridge, installed January 4, 1912, and used until February 5, 1913, when a new staff in two sections was installed on left bank at bridge. Original gage was a vertical staff fastened to an alder tree on right bank 50 feet above bridge. Datum of present gage is 3.04 feet above that of previous gages which were set at approximately the same datum. All gage heights for 1912 reduced to new datum.

CHANNEL.—Fine gravel and sand; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation somewhat affected by ice.

ACCURACY.—Rating curve fairly well defined except at high water; results are fair.

COOPERATION.—Gage-height record furnished by officials of Yosemite National Park.

*Discharge measurements of Yosemite Creek at Yosemite, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 17 | R. C. Rice | 2.56 | 0.1 | Mar. 4 | D. A. Sherfey | 2.97 | 7.5 |
| Feb. 5 | Lasley Lee | 2.79 | 1.0 | 31 | do | 4.05 | 104 |
| 5 | D. A. Sherfey[a] | 2.78 | .8 | June 5 | E. C. Murphy | 4.18 | 162 |
| 17 | do | 3.18 | 15 | | | | |

[a] Resident engineer, Yosemite National Park.

*Daily gage height, in feet, of Yosemite Creek at Yosemite, Cal., for the year ending Sept. 30, 1913.*

[H. C. Currier, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.59 | 2.61 | 2.69 | 2.74 | ..... | 2.78 | 4.45 | 6.0 | 4.15 | 3.25 | 3.00 | 3.10 |
| 2 | 2.59 | 2.61 | 2.69 | 2.74 | ..... | 2.88 | 3.78 | 4.5 | 4.05 | 3.25 | 3.00 | 3.10 |
| 3 | 2.59 | 2.61 | 2.66 | ..... | ..... | 2.90 | 3.40 | 4.6 | 4.1 | 3.23 | 3.02 | 3.08 |
| 4 | 2.58 | 2.61 | 2.66 | ..... | ..... | 2.97 | 3.49 | 4.95 | 4.5 | 3.22 | 3.02 | 3.08 |
| 5 | 2.58 | 2.61 | 2.76 | ..... | 2.78 | 3.10 | 3.78 | 4.8 | 4.2 | 3.22 | 2.90 | 3.02 |
| 6 | 2.58 | 2.62 | 2.76 | ..... | 2.95 | 3.18 | 3.56 | 4.7 | 4.8 | 3.20 | 2.90 | 3.00 |
| 7 | 2.57 | 2.86 | 2.76 | ..... | 2.96 | 3.35 | 4.9 | 4.7 | 4.1 | 3.15 | 2.88 | 2.96 |
| 8 | 2.57 | 2.75 | 2.76 | ..... | 2.97 | 3.35 | 3.64 | 4.7 | 4.05 | 3.12 | 2.85 | 2.92 |
| 9 | 2.56 | 2.74 | 2.74 | ..... | 2.95 | 3.41 | 3.66 | 4.7 | 4.3 | 3.10 | 2.85 | 2.87 |
| 10 | 2.56 | 2.96 | 2.74 | ..... | 2.92 | 3.44 | 4.2 | 4.7 | 3.95 | 3.05 | 2.83 | 2.82 |
| 11 | 2.56 | 2.99 | 2.74 | ..... | 2.93 | 3.41 | 4.2 | 4.3 | 3.80 | 3.05 | 2.83 | 2.81 |
| 12 | 2.56 | 3.05 | 2.74 | ..... | 2.91 | 3.34 | 4.1 | 4.3 | 3.80 | 3.00 | 2.83 | 2.80 |
| 13 | 2.56 | 3.00 | 2.72 | ..... | 2.92 | 3.26 | 3.89 | 4.25 | 3.84 | 2.99 | 2.82 | 2.79 |
| 14 | 2.56 | 2.93 | 2.72 | ..... | 2.99 | 3.13 | 3.82 | 4.2 | 3.79 | 2.92 | 2.82 | 2.78 |
| 15 | 2.56 | 2.86 | 2.75 | ..... | 3.08 | 3.10 | 5.6 | 4.25 | 3.80 | 2.92 | 2.82 | 2.77 |
| 16 | 2.56 | 2.87 | 2.75 | ..... | 3.14 | 3.10 | 3.60 | 4.5 | 3.63 | 2.91 | 2.82 | 2.76 |
| 17 | 2.56 | 2.89 | 2.74 | ..... | 3.18 | 3.16 | 3.59 | 4.4 | 3.63 | 2.90 | 2.80 | 2.76 |
| 18 | 2.56 | 2.89 | 2.74 | ..... | 3.10 | 3.20 | 3.57 | 5.8 | 3.57 | 2.90 | 2.80 | 2.75 |
| 19 | 2.56 | 2.82 | 2.74 | ..... | 3.11 | 3.19 | 3.58 | 4.6 | 3.51 | 2.85 | 2.80 | 2.75 |
| 20 | 2.56 | 2.77 | 2.74 | ..... | 2.80 | 3.10 | 3.60 | 4.4 | 3.42 | 2.85 | 2.80 | 2.74 |
| 21 | 2.56 | 2.77 | 2.74 | ..... | 2.82 | 3.10 | 3.90 | 4.4 | 3.40 | 2.92 | 2.85 | 2.74 |
| 22 | 2.56 | 2.78 | 2.74 | ..... | 2.81 | 2.97 | 3.91 | 4.4 | 3.40 | 3.10 | 2.85 | 2.73 |
| 23 | 2.56 | 2.78 | 2.74 | ..... | 2.75 | 2.91 | 4.15 | 4.4 | 3.36 | 3.10 | 3.40 | 2.73 |
| 24 | 2.56 | 2.74 | 2.74 | ..... | 2.81 | 2.89 | 5.0 | 4.4 | 3.35 | 3.20 | 3.40 | 2.72 |
| 25 | 2.56 | 2.74 | 2.74 | ..... | 2.80 | 2.99 | 5.4 | 4.3 | 3.36 | 3.25 | 3.25 | 2.72 |
| 26 | 2.56 | 2.72 | 2.74 | ..... | 2.79 | 2.90 | 5.4 | 4.35 | 4.0 | 3.40 | 3.25 | 2.71 |
| 27 | 2.56 | 2.72 | 2.74 | ..... | 2.79 | 3.20 | 4.5 | 4.3 | 4.1 | 3.40 | 3.30 | 2.70 |
| 28 | 2.58 | 2.74 | 2.74 | ..... | 2.78 | 3.35 | 4.1 | 4.6 | 3.68 | 3.18 | 3.85 | 2.69 |
| 29 | 2.59 | 2.74 | 2.74 | ..... | ..... | 3.50 | 3.92 | 4.1 | 3.60 | 3.10 | 3.42 | 2.68 |
| 30 | 2.61 | 2.71 | 2.74 | ..... | ..... | 3.70 | 5.1 | 4.25 | 3.43 | 3.10 | 3.40 | 2.68 |
| 31 | 2.61 | ..... | 2.74 | ..... | ..... | 4.25 | ..... | 4.3 | ..... | 3.05 | 3.19 | ..... |

NOTE.—Creek frozen over Dec. 18, 1912; gage broken out Jan. 18, 1913; all gage heights reduced to datum of gage installed Feb. 5, 1913. Observer notes: Apr. 7 and 15, 1913, creek jammed with ice; Apr. 3 and May 1, 1913, creek full of ice.

*Daily discharge, in second-feet, of Yosemite Creek at Yosemite, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | | |
| 1 | ..... | 5.9 | 10 | 65 | 82 | 775 | 38 | 1.5 | 0.3 |
| 2 | ..... | 7.5 | 7.0 | 82 | 74 | 825 | 35 | 1.7 | .3 |
| 3 | ..... | 8.5 | 8.0 | 82 | 79 | 750 | 32 | 1.7 | .3 |
| 4 | 0.6 | 2.8 | 10 | 82 | 82 | 627 | 31 | 1.9 | .3 |
| 5 | .6 | 10 | 11 | 80 | 85 | 627 | 29 | 2.2 | .3 |
| 6 | .6 | 10 | 11 | 80 | 98 | 675 | 29 | .8 | .3 |
| 7 | .7 | 10 | 12 | 130 | 233 | 483 | 28 | .7 | .4 |
| 8 | .7 | 10 | 12 | 106 | 276 | 288 | 27 | .7 | .5 |
| 9 | .7 | 10 | 13 | 96 | 310 | 265 | 27 | .7 | .4 |
| 10 | .7 | 10 | 9.0 | 68 | 244 | 288 | 24 | .6 | .4 |
| 11 | .9 | 10 | 10 | 61 | 391 | 288 | 22 | .5 | .4 |
| 12 | .9 | 10 | 10 | 44 | 555 | 299 | 19 | .5 | .4 |
| 13 | .9 | 10 | 12 | 42 | 531 | 244 | 17 | .4 | .4 |
| 14 | .9 | 10 | 13 | 41 | 555 | 184 | 16 | .4 | .4 |
| 15 | .9 | 10 | 13 | 40 | 651 | 148 | 16 | .4 | .4 |
| 16 | .9 | 10 | 14 | 38 | 651 | 130 | 16 | .4 | .4 |
| 17 | 1.0 | 10 | 16 | 39 | 651 | 114 | 16 | .4 | .4 |
| 18 | 1.0 | 13 | 16 | 41 | 651 | 130 | 20 | .4 | .4 |
| 19 | 1.1 | 16 | 22 | 42 | 483 | 148 | 52 | .4 | .4 |
| 20 | 2.4 | 16 | 21 | 44 | 265 | 114 | 20 | .4 | .4 |
| 21 | 2.4 | 16 | 22 | 44 | 213 | 104 | 5.5 | .3 | .4 |
| 22 | 2.4 | 13 | 24 | 44 | 194 | 98 | 3.6 | .3 | .4 |
| 23 | 2.2 | 5.9 | 24 | 38 | 213 | 82 | 2.4 | .3 | .4 |
| 24 | 2.6 | 13 | 27 | 61 | 223 | 68 | 2.4 | .3 | .3 |
| 25 | 2.6 | 5.5 | 27 | 61 | 244 | 66 | 2.6 | .3 | .3 |
| 26 | 2.6 | 5.9 | 27 | 64 | 322 | 55 | 2.8 | .3 | .3 |
| 27 | 2.4 | 8.5 | 28 | 74 | 310 | 58 | 3.2 | .3 | .3 |
| 28 | 4.3 | 9.0 | 28 | 109 | 579 | 53 | 2.6 | .3 | .2 |
| 29 | 5.5 | 10 | 44 | 68 | 775 | 44 | 2.4 | .3 | .2 |
| 30 | 5.9 | ..... | 42 | 114 | 603 | 44 | 1.7 | .3 | .2 |
| 31 | 5.9 | ..... | 38 | ..... | 725 | ..... | 1.5 | .3 | ..... |

| Day. | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 0.2 | 0.2 | 0.5 | ..... | 1.0 | 204 | 555 | 158 | 28 | 9.0 | 15 |
| 2 | .2 | .2 | .5 | ..... | 2.8 | 85 | 220 | 140 | 28 | 9.0 | 15 |
| 3 | .2 | .2 | .4 | ..... | 3.2 | 37 | 240 | 149 | 26 | 10 | 14 |
| 4 | .2 | .2 | .4 | ..... | 5.9 | 47 | 314 | 220 | 25 | 10 | 14 |
| 5 | .2 | .2 | .9 | 1.0 | 12 | 85 | 281 | 166 | 25 | 4.5 | 10 |
| 6 | .2 | .3 | .9 | 5.1 | 18 | 55 | 260 | 281 | 23 | 4.5 | 9.0 |
| 7 | .1 | 2.4 | .9 | 5.5 | 32 | 60 | 260 | 149 | 19 | 3.9 | 7.2 |
| 8 | .1 | .8 | .9 | 5.9 | 32 | 65 | 260 | 140 | 17 | 3.0 | 5.4 |
| 9 | .1 | .7 | .7 | 5.1 | 38 | 68 | 260 | 184 | 15 | 3.0 | 3.6 |
| 10 | .1 | 5.5 | .7 | 4.0 | 41 | 157 | 260 | 124 | 12 | 2.4 | 2.1 |
| 11 | .1 | 6.6 | .7 | 4.3 | 38 | 157 | 184 | 99 | 12 | 2.4 | 1.8 |
| 12 | .1 | 9.5 | .7 | 3.6 | 31 | 139 | 184 | 99 | 9.0 | 2.4 | 1.5 |
| 13 | .1 | 7.0 | .6 | 4.0 | 24 | 102 | 175 | 105 | 8.6 | 2.1 | 1.4 |
| 14 | .1 | 4.3 | .6 | 6.6 | 14 | 91 | 166 | 97 | 5.4 | 2.1 | 1.3 |
| 15 | .1 | 2.4 | .8 | 11 | 12 | 76 | 175 | 99 | 5.4 | 2.1 | 1.2 |
| 16 | .1 | 2.6 | .8 | 15 | 12 | 60 | 220 | 73 | 5.0 | 2.1 | 1.1 |
| 17 | .1 | 3.0 | .7 | 18 | 16 | 59 | 202 | 73 | 4.5 | 1.5 | 1.1 |
| 18 | .1 | 3.0 | ..... | 12 | 19 | 56 | 507 | 65 | 4.5 | 1.5 | 1.0 |
| 19 | .1 | 1.5 | ..... | 13 | 18 | 58 | 240 | 56 | 3.0 | 1.5 | 1.0 |
| 20 | .1 | .9 | ..... | 1.1 | 12 | 60 | 202 | 45 | 3.0 | 1.5 | .9 |
| 21 | .1 | .9 | ..... | 1.5 | 12 | 104 | 202 | 43 | 5.4 | 3.0 | .9 |
| 22 | .1 | 1.0 | ..... | 1.3 | 5.9 | 106 | 202 | 43 | 15 | 3.0 | .8 |
| 23 | .1 | 1.0 | ..... | .8 | 3.6 | 148 | 202 | 39 | 15 | 43 | .8 |
| 24 | .1 | .7 | ..... | 1.3 | 3.0 | 322 | 202 | 38 | 23 | 43 | .7 |
| 25 | .1 | .7 | ..... | 1.1 | 6.6 | 414 | 184 | 39 | 28 | 28 | .7 |
| 26 | .1 | .6 | ..... | 1.0 | 3.2 | 414 | 193 | 132 | 43 | 28 | .6 |
| 27 | .1 | .6 | ..... | 1.0 | 19 | 213 | 184 | 149 | 43 | 32 | .5 |
| 28 | .2 | .7 | ..... | 1.0 | 32 | 139 | 240 | 80 | 21 | 107 | .5 |
| 29 | .2 | .7 | ..... | ..... | 48 | 107 | 149 | 69 | 15 | 45 | .4 |
| 30 | .2 | .6 | ..... | ..... | 73 | 345 | 175 | 47 | 15 | 43 | .4 |
| 31 | .2 | ..... | ..... | ..... | 166 | ..... | 184 | ..... | 12 | 22 | ..... |

NOTE.—Discharge determined from two rating curves applicable as follows: Poorly defined Jan. 4, 1912, to Apr. 30, 1913: fairly well defined May 1 to Sept. 30, 1913. Discharge estimated as follows: Dec. 18–31, 1912, 0.1 second-foot; Jan. 1–31, 1913, 0.2 second-foot; Feb. 1–4, 1913, 0.7 second-foot; Apr. 7, 1913, 60 second-feet; Apr. 15, 1913, 76 second-feet.

*Monthly discharge of Yosemite Creek at Yosemite, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| January 4–31 | 5.9 | 0.6 | 1.94 | 108 | B. |
| February | 16 | 2.8 | 9.88 | 568 | C. |
| March | 44 | 7 | 18.7 | 1,150 | C |
| April | 130 | 38 | 66.0 | 3,930 | C. |
| May | 775 | 74 | 366 | 22,500 | C. |
| June | 825 | 44 | 269 | 16,000 | C. |
| July | 52 | 1.5 | 17.6 | 1,080 | C. |
| August | 2.2 | .3 | .65 | 40 | |
| September | .5 | .2 | .35 | 21 | |
| The period | | | | 45,400 | |
| 1912–13. | | | | | |
| October | 0.2 | 0.1 | 0.13 | 8 | |
| November | 9.5 | .2 | 1.97 | 117 | B. |
| December | .9 | | *a* .42 | 26 | |
| January | | | *a* .20 | 12 | |
| February | 18 | | *a* 4.54 | 252 | B. |
| March | 166 | 1.0 | 24.3 | 1,490 | C. |
| April | 414 | 37 | 134 | 7,970 | C. |
| May | 555 | 149 | 235 | 14,400 | B. |
| June | 281 | 38 | 107 | 6,370 | B. |
| July | 43 | 3.0 | 16.6 | 1,020 | B. |
| August | 107 | 1.5 | 15.3 | 941 | B. |
| September | 15 | 4.4 | 3.80 | 226 | B. |
| The year | 555 | | 45.4 | 32,800 | |

*a* Estimated.

### SOUTH FORK OF MERCED RIVER NEAR WAWONA, CAL.

LOCATION.—In the SE. ¼ sec. 33, T. 4 S., R. 21 E., in the Sierra National Forest, and 1 mile northwest of Wawona. Big Creek enters half a mile above and Rush Creek three-fourths mile below the station.

RECORDS AVAILABLE.—December 15, 1910, to June 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on left bank installed August 22, 1911, 250 feet below site of original gage, which was a vertical staff fastened to the center pier of the footbridge that was destroyed by high water January 30, 1911. Original datum has not been maintained.

CHANNEL.—Gravel and bowlders; permanent.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—The ranch of the Wawona Co. is irrigated from a tributary above the station.

ACCURACY.—Results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service, Gage-height record furnished by A. C. Leonard, ranger in Yosemite National Park.

*Discharge measurements of South Fork of Merced River near Wawona, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 28 | 2.05 | 17 | May 24 | 3.76 | 599 |
| May 22 | 3.84 | 656 | 24 | 3.54 | 470 |
| 23 | 3.72 | 588 | | | |

*Daily gage height, in feet, of South Fork of Merced River near Wawona, Cal., for the year ending Sept. 30, 1913.*

[A. C. Leonard, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.0 | 2.0 | 2.6 | 2.7 | 2.2 | 2.5 | 3.6 | 4.3 | 3.8 |
| 2 | 2.0 | 2.0 | 2.6 | 2.7 | 2.2 | 2.5 | 3.6 | 4.3 | 4.0 |
| 3 | 1.9 | 2.0 | 2.6 | 2.7 | 2.3 | 2.5 | 3.7 | 4.2 | 4.0 |
| 4 | 2.0 | 2.0 | 2.6 | 2.7 | 2.3 | 2.5 | 3.7 | 4.3 | 4.0 |
| 5 | 2.1 | 2.1 | 2.6 | 2.7 | 2.3 | 2.6 | 3.8 | 4.3 | 3.8 |
| 6 | 2.0 | 2.1 | 2.6 | 2.8 | 2.4 | 2.6 | 3.8 | 4.3 | 3.6 |
| 7 | 2.0 | 2.2 | 2.7 | 2.8 | 2.4 | 2.5 | 3.8 | 4.3 | 3.2 |
| 8 | 2.0 | 2.2 | 2.7 | 2.9 | 2.4 | 2.5 | 3.8 | 4.4 | 3.2 |
| 9 | 2.1 | 2.2 | 2.7 | 2.9 | 2.4 | 2.5 | 3.8 | 4.4 | 3.4 |
| 10 | 2.1 | 2.2 | 2.7 | 2.9 | 2.5 | 2.4 | 3.8 | 4.4 | 3.2 |
| 11 | 2.0 | 2.3 | 2.7 | 2.9 | 2.5 | 2.4 | 3.7 | 4.4 | 3.0 |
| 12 | 1.9 | 2.2 | 2.7 | 2.9 | 2.5 | 2.3 | 3.7 | 4.5 | 3.0 |
| 13 | 1.9 | 2.2 | 2.7 | 2.9 | 2.5 | 2.3 | 3.7 | 4.5 | 2.9 |
| 14 | 1.8 | 2.2 | 2.7 | 2.9 | 2.4 | 2.2 | 3.8 | 4.5 | 3.0 |
| 15 | 1.9 | 2.2 | 2.8 | 3.0 | 2.4 | 2.2 | 3.8 | 4.5 | 2.8 |
| 16 | 2.0 | 2.2 | 2.8 | 3.0 | 2.4 | 2.2 | 3.9 | 4.6 | 2.9 |
| 17 | 1.9 | 2.2 | 2.8 | 2.8 | 2.4 | 2.2 | 3.9 | 4.3 | 3.0 |
| 18 | 1.9 | 2.3 | 2.9 | 2.8 | 2.4 | 2.2 | 3.9 | 4.2 | 3.2 |
| 19 | 1.8 | 2.3 | 2.9 | 2.8 | 2.4 | 2.2 | 3.9 | 3.55 | 3.0 |
| 20 | 1.8 | 2.4 | 2.8 | 2.8 | 2.4 | 2.3 | 3.9 | 3.6 | 3.4 |
| 21 | 1.9 | 2.4 | 2.9 | 2.7 | 2.4 | 2.4 | 4.0 | 3.75 | 3.4 |
| 22 | 1.8 | 2.5 | 2.9 | 2.6 | 2.4 | 2.4 | 4.0 | 3.9 | 3.1 |
| 23 | 1.8 | 2.5 | 2.9 | 2.5 | 2.4 | 2.4 | 4.1 | 3.95 | 3.2 |
| 24 | 1.9 | 2.5 | 2.9 | 2.3 | 2.4 | 2.4 | 4.2 | 3.8 | 3.3 |
| 25 | 1.9 | 2.5 | 2.9 | 2.2 | 2.4 | 2.5 | 4.3 | 3.8 | 3.3 |
| 26 | 1.9 | 2.5 | 2.9 | 2.2 | 2.4 | 2.6 | 4.5 | 3.75 | 3.35 |
| 27 | 1.9 | 2.6 | 2.9 | 2.1 | 2.4 | 2.8 | 4.6 | 3.55 | 3.3 |
| 28 | 2.1 | 2.6 | 2.9 | 2.0 | 2.4 | 2.8 | 4.5 | 4.0 | 3.1 |
| 29 | 2.1 | 2.6 | 2.8 | 2.0 | ..... | 2.9 | 4.4 | 3.4 | 3.3 |
| 30 | 2.0 | 2.6 | 2.7 | 2.0 | ..... | 2.9 | 4.4 | 3.8 | 3.1 |
| 31 | 2.0 | ..... | 2.7 | 2.1 | ..... | 3.1 | ..... | 3.9 | ..... |

*Daily discharge, in second-feet, of South Fork of Merced River near Wawona, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 26 | 11 | ..... | 31 | 21 | ..... | 34 |
| 2 | ..... | 28 | 12 | ..... | 31 | 22 | 41 | 65 |
| 3 | ..... | 31 | 13 | ..... | 31 | 23 | 38 | 52 |
| 4 | ..... | 31 | 14 | ..... | 31 | 24 | 36 | 49 |
| 5 | ..... | 31 | 15 | ..... | 31 | 25 | 34 | 36 |
| 6 | ..... | 31 | 16 | ..... | 31 | 26 | 31 | 36 |
| 7 | ..... | 31 | 17 | ..... | 31 | 27 | 28 | 34 |
| 8 | ..... | 31 | 18 | ..... | 31 | 28 | 31 | 26 |
| 9 | ..... | 31 | 19 | ..... | 31 | 29 | 31 | 26 |
| 10 | ..... | 31 | 20 | ..... | 31 | 30 | 31 | 26 |
| | | | | | | 31 | 31 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 31 | 26 | 65 | 160 | 250 | 210 | 140 | 395 | 2,500 | 175 | 26 | 14 |
| 2 | 34 | 26 | 85 | 110 | 295 | 250 | 175 | 395 | 2,500 | 175 | 26 | 14 |
| 3 | 34 | 26 | 85 | 110 | 295 | 210 | 212 | 450 | 3,110 | 140 | 26 | 20 |
| 4 | 31 | 26 | 85 | 140 | 295 | 140 | 250 | 395 | 2,300 | 140 | 20 | 20 |
| 5 | 26 | 26 | 110 | 140 | 295 | 85 | 250 | 450 | 2,500 | 110 | 20 | 20 |
| 6 | 26 | 26 | 110 | 110 | 250 | 85 | 295 | 450 | 2,300 | 110 | 20 | 20 |
| 7 | 28 | 20 | 110 | 140 | 250 | 85 | 295 | 505 | 2,200 | 110 | 14 | 20 |
| 8 | 26 | 20 | 140 | 175 | 295 | 110 | 395 | 565 | 1,540 | 110 | 14 | 20 |
| 9 | 26 | 20 | 140 | 175 | 210 | 75 | 395 | 625 | 1,450 | 85 | 14 | 20 |
| 10 | 31 | 26 | 140 | 175 | 175 | 85 | 395 | 690 | 1,120 | 85 | 14 | 20 |
| 11 | 31 | 26 | 110 | 175 | 175 | 85 | 450 | 690 | 1,360 | 65 | 14 | 20 |
| 12 | 31 | 26 | 110 | 140 | 210 | 85 | 345 | 690 | 970 | 65 | 14 | 20 |
| 13 | 28 | 26 | 140 | 175 | 210 | 85 | 210 | 825 | 755 | 65 | 14 | 20 |
| 14 | 28 | 26 | 140 | 175 | 250 | 85 | 175 | 1,040 | 690 | 65 | 14 | 14 |
| 15 | 26 | 26 | 140 | 250 | 210 | 65 | 140 | 1,280 | 625 | 65 | 14 | 14 |
| 16 | 26 | 26 | 140 | 295 | 210 | 85 | 175 | 1,360 | 625 | 65 | 14 | 14 |
| 17 | 26 | 26 | 140 | 210 | 210 | 85 | 140 | 1,360 | 625 | 65 | 14 | 14 |
| 18 | 26 | 26 | 140 | 250 | 295 | 65 | 175 | 1,540 | 505 | 65 | 14 | 14 |
| 19 | 26 | 26 | 175 | 295 | 295 | 85 | 175 | 1,720 | 505 | 65 | 14 | 14 |
| 20 | 26 | 26 | 175 | 295 | 295 | 110 | 210 | 1,810 | 505 | 65 | 14 | 14 |
| 21 | 27 | 26 | 175 | 250 | 295 | 110 | 210 | 1,360 | 450 | 65 | 14 | 14 |
| 22 | 26 | 26 | 175 | 250 | 295 | 85 | 250 | 895 | 565 | 65 | 14 | 14 |
| 23 | 26 | 140 | 175 | 295 | 295 | 85 | 295 | 625 | 565 | 65 | 14 | 14 |
| 24 | 26 | 110 | 175 | 250 | 210 | 140 | 295 | 625 | 395 | 49 | 14 | 14 |
| 25 | 26 | 175 | 210 | 295 | 295 | 140 | 250 | 1,200 | 295 | 49 | 14 | 14 |
| 26 | 26 | 140 | 175 | 295 | 210 | 175 | 295 | 1,200 | 210 | 49 | 14 | 14 |
| 27 | 26 | 140 | 175 | 250 | 210 | 175 | 295 | 1,360 | 210 | 49 | 14 | 14 |
| 28 | 27 | 140 | 175 | 250 | 250 | 175 | 345 | 2,400 | 175 | 49 | 14 | 14 |
| 29 | 27 | 140 | 210 | 295 | 295 | 175 | 345 | 2,500 | 175 | 36 | 14 | 14 |
| 30 | 27 | 110 | 210 | 295 | ..... | 210 | 395 | 2,500 | 140 | 36 | 14 | 14 |
| 31 | 27 | ..... | 210 | 295 | ..... | 210 | ..... | 2,100 | ..... | 36 | 14 | ..... |

*Daily discharge, in second-feet, of South Fork of Merced River near Wawona, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | |
| 1 | 14 | 14 | 85 | 110 | 26 | 65 | 505 | 970 | 625 |
| 2 | 14 | 14 | 85 | 110 | 26 | 65 | 505 | 970 | 755 |
| 3 | 10 | 14 | 85 | 110 | 36 | 65 | 565 | 895 | 755 |
| 4 | 14 | 14 | 85 | 110 | 36 | 65 | 565 | 970 | 755 |
| 5 | 20 | 20 | 85 | 110 | 36 | 85 | 625 | 970 | 625 |
| 6 | 14 | 20 | 85 | 140 | 49 | 85 | 625 | 970 | 505 |
| 7 | 14 | 26 | 110 | 140 | 49 | 65 | 625 | 970 | 295 |
| 8 | 14 | 26 | 110 | 175 | 49 | 65 | 625 | 1,040 | 295 |
| 9 | 20 | 26 | 110 | 175 | 49 | 65 | 625 | 1,040 | 395 |
| 10 | 20 | 26 | 110 | 175 | 65 | 49 | 625 | 1,040 | 295 |
| 11 | 14 | 36 | 110 | 175 | 65 | 49 | 565 | 1,040 | 210 |
| 12 | 10 | 26 | 110 | 175 | 65 | 36 | 565 | 1,120 | 210 |
| 13 | 10 | 26 | 110 | 175 | 65 | 36 | 565 | 1,120 | 175 |
| 14 | 8 | 26 | 110 | 175 | 49 | 26 | 625 | 1,120 | 210 |
| 15 | 10 | 26 | 140 | 210 | 49 | 26 | 625 | 1,120 | 140 |
| 16 | 14 | 26 | 140 | 210 | 49 | 26 | 690 | 1,200 | 175 |
| 17 | 10 | 26 | 140 | 140 | 49 | 26 | 690 | 970 | 210 |
| 18 | 10 | 36 | 175 | 140 | 49 | 26 | 690 | 895 | 295 |
| 19 | 8 | 36 | 175 | 140 | 49 | 26 | 690 | 478 | 210 |
| 20 | 8 | 49 | 140 | 140 | 49 | 36 | 690 | 505 | 395 |
| 21 | 10 | 49 | 175 | 110 | 49 | 49 | 755 | 595 | 395 |
| 22 | 8 | 65 | 175 | 85 | 49 | 49 | 755 | 690 | 250 |
| 23 | 8 | 65 | 175 | 65 | 49 | 49 | 825 | 722 | 295 |
| 24 | 10 | 65 | 175 | 36 | 49 | 49 | 895 | 625 | 345 |
| 25 | 10 | 65 | 175 | 26 | 49 | 65 | 970 | 625 | 345 |
| 26 | 10 | 65 | 175 | 26 | 49 | 85 | 1,120 | 595 | 370 |
| 27 | 10 | 85 | 175 | 20 | 49 | 140 | 1,200 | 478 | 345 |
| 28 | 20 | 85 | 175 | 14 | 49 | 140 | 1,120 | 755 | 250 |
| 29 | 20 | 85 | 140 | 14 | ..... | 175 | 1,040 | 395 | 345 |
| 30 | 14 | 85 | 110 | 14 | ..... | 175 | 1,040 | 625 | 250 |
| 31 | 14 | ..... | 110 | 20 | ..... | 250 | ..... | 690 | ..... |

NOTE.—Discharge determined from a rating curve well defined between 75 and 2,200 second-feet. Discharge for days for which gage heights are missing, interpolated.

*Monthly discharge of South Fork of Merced River near Wawona, Cal., for the year ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August 22–31 | 41 | 28 | 33.2 | 658 | C. |
| September | 65 | 26 | 33.2 | 1,980 | C. |
| 1911–12. | | | | | |
| October | 34 | 26 | 27.7 | 1,700 | C. |
| November | 175 | 20 | 55.0 | 3,270 | B. |
| December | 210 | 65 | 147 | 9,040 | B. |
| January | 295 | 110 | 217 | 13,300 | B. |
| February | 295 | 175 | 253 | 14,600 | B. |
| March | 250 | 65 | 124 | 7,620 | B. |
| April | 450 | 140 | 266 | 15,800 | B. |
| May | 2,500 | 395 | 1,100 | 67,600 | A. |
| June | 3,110 | 140 | 1,060 | 63,100 | A. |
| July | 175 | 36 | 78.6 | 4,830 | B. |
| August | 26 | 14 | 15.7 | 965 | C. |
| September | 20 | 14 | 16.2 | 964 | C. |
| The year | 3,110 | 14 | 279 | 203,000 | |
| 1912–13. | | | | | |
| October | 20 | 8 | 12.6 | 775 | C. |
| November | 85 | 14 | 40.9 | 2,430 | C. |
| December | 175 | 85 | 131 | 8,060 | B. |
| January | 210 | 14 | 112 | 6,890 | B. |
| February | 65 | 26 | 48.2 | 2,680 | C. |
| March | 250 | 26 | 71.4 | 4,390 | B. |
| April | 1,200 | 505 | 734 | 43,700 | A. |
| May | 1,200 | 395 | 845 | 52,000 | A. |
| June | 755 | 140 | 357 | 21,200 | A. |
| The period | ..... | ..... | ..... | 142,000 | |

## TUOLUMNE RIVER AND TRIBUTARIES.

### TUOLUMNE RIVER AT HETCH HETCHY CABIN, NEAR SEQUOIA, CAL.

LOCATION.—Near east line of sec. 10, T. 1 N., R. 20 E., in Hetch Hetchy Valley, in Yosemite National Park, about half a mile above junction with Falls Creek, 2 miles above Hetch Hetchy dam site, and about 13 miles northeast of Sequoia.

RECORDS AVAILABLE.—October 1, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff on left bank at Hetch Hetchy cabin. Leitz water-stage recorder installed 25 feet above staff gage. (No record of gages used previous to 1913).

CHANNEL.—Gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet above staff gage, or by wading.

WINTER FLOW.—Discharge relation somewhat affected by ice.

COOPERATION.—Complete record furnished by city of San Francisco through M. M. O'Shaughnessy, city engineer.

*Daily gage height, in feet, of Tuolumne River, at Hetch Hetchy cabin, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | ..... | 0.45 | 0.51 | 0.35 | 1.62 | 1.32 | 4.47 | 4.7 | 5.28 | 8.20 | ..... | 1.54 |
| 2 | ..... | .40 | .48 | .31 | 1.64 | 1.43 | 4.30 | 4.5 | 6 08 | 8.74 | ..... | 1.43 |
| 3 | ..... | .40 | .87 | .36 | 2.92 | 2.22 | 4.51 | 4.9 | 7.71 | 9.68 | ..... | 1.43 |
| 4 | ..... | .37 | .90 | .38 | 2.96 | 2.31 | 4.00 | 5.5 | 9.18 | 10.28 | ..... | 1.20 |
| 5 | ..... | .35 | .88 | .32 | 2.55 | 2.16 | 4.44 | 6.2 | 10.22 | 10.00 | ..... | 1.20 |
| 6 | ..... | .30 | .86 | .33 | 2.34 | 2.01 | 3.80 | 5.0 | 11.47 | 10.60 | 3.24 | 1.20 |
| 7 | ..... | .30 | 1.18 | .31 | 2.17 | 2.43 | 3.55 | 4.8 | 8.84 | 9.10 | ..... | 1.12 |
| 8 | ..... | .25 | 1.27 | .31 | 2.08 | 2.66 | 3.51 | 4.8 | 8.74 | 9.14 | ..... | 1.12 |
| 9 | ..... | .25 | 1.10 | 1.25 | 2.03 | 2.62 | 3.35 | 5.0 | 9.96 | 8.78 | ..... | 1.04 |
| 10 | 0.25 | .30 | 1.90 | .88 | 1.98 | 2.38 | 3.36 | 4.8 | 10.29 | 8.77 | ..... | 1.04 |
| 11 | .50 | .33 | 1.87 | .67 | 1.93 | 2.37 | 3.08 | 5.4 | 12.64 | 8.40 | 2.80 | 1.04 |
| 12 | .98 | .62 | 1.38 | .77 | 1.83 | 2.39 | 2.93 | 5.6 | 13.60 | 8.78 | ..... | .96 |
| 13 | .81 | .65 | 1.10 | .90 | 1.95 | 2.21 | 2.73 | 5.2 | 14.12 | 8.50 | ..... | .96 |
| 14 | .71 | .60 | .99 | 1.00 | 1.84 | 2.18 | 2.74 | 5.1 | 11.70 | 8.30 | 2.32 | .96 |
| 15 | .76 | .55 | .94 | 1.11 | 1.75 | 2.28 | 2.78 | 4.6 | 12.50 | 10.30 | ..... | .86 |
| 16 | .91 | .50 | .84 | .92 | 1.66 | 2.43 | 2.87 | 4.3 | 13.13 | 9.70 | ..... | .86 |
| 17 | .76 | .45 | .76 | 1.00 | 1.62 | 2.66 | 3.16 | 4.2 | 14.11 | 9.90 | 2.00 | .86 |
| 18 | .90 | .60 | .74 | .98 | 1.64 | 2.86 | 3.52 | 4.2 | 14.52 | 8.87 | ..... | .86 |
| 19 | .90 | .68 | .69 | .92 | 1.63 | 2.82 | 3.85 | 5.2 | 13.71 | 7.69 | ..... | .86 |
| 20 | .80 | .60 | .70 | 3.00 | 1.57 | 2.92 | 3.87 | 5.9 | 13.81 | 6.87 | 1.78 | .80 |
| 21 | .80 | .66 | .62 | 2.33 | 1.48 | 2.76 | 3.87 | 6.6 | 13.50 | 5.85 | ..... | .80 |
| 22 | .80 | .66 | .64 | 1.74 | 1.47 | 2.90 | 4.17 | 7.8 | 11.98 | 5.71 | ..... | .90 |
| 23 | .76 | .68 | .62 | 1.41 | 1.56 | 3.31 | 4.80 | 9.4 | 9.30 | 5.64 | ..... | 1.11 |
| 24 | .70 | .76 | .60 | 2.79 | 1.51 | 3.09 | 5.23 | 8.6 | 8.59 | 5.85 | ..... | 1.02 |
| 25 | .66 | .75 | .57 | 2.78 | 1.46 | 3.27 | 5.55 | 7.0 | 7.78 | 5.07 | ..... | .95 |
| 26 | .61 | .58 | .43 | 2.02 | 1.36 | 3.34 | 5.69 | 5.9 | 10.00 | 4.50 | 1.55 | .88 |
| 27 | .60 | .50 | .43 | 1.72 | 1.36 | 3.33 | 4.88 | 6.1 | 11.66 | 4.37 | 1.55 | .83 |
| 28 | .55 | .61 | .44 | 1.62 | 1.30 | 3.51 | 4.25 | 6.3 | 11.28 | 4.32 | 1.55 | .80 |
| 29 | .51 | .50 | .48 | 7.45 | ..... | 3.71 | 4.08 | 6.5 | 9.92 | 4.22 | 1.54 | .78 |
| 30 | .50 | .51 | .38 | 11.28 | ..... | 3.95 | 4.22 | 5.9 | 8.76 | 3.97 | 1.54 | .82 |
| 31 | .50 | ..... | .38 | 6.38 | ..... | 4.28 | ..... | 5.5 | ..... | 3.75 | 1.54 | ..... |

*Daily gage height, in feet, of Tuolumne River, at Hetch Hetchy cabin, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 1.18 | 0.69 | 0.67 | 0.94 | 0.97 | 0.85 | 1.47 | 2.42 | 9.21 | 2.95 | 1.00 | 0.08 |
| 2 | 1.03 | .68 | .67 | .98 | .96 | .88 | 1.78 | 2.14 | 9.60 | 2.80 | .98 | .08 |
| 3 | .92 | .68 | .66 | .98 | .96 | .84 | 1.97 | 2.02 | 11.03 | 2.55 | .92 | .08 |
| 4 | .89 | .65 | .66 | .98 | .94 | .94 | 1.85 | 2.22 | 10.66 | 2.40 | .78 | .23 |
| 5 | .87 | .68 | .64 | 1.02 | .95 | 1.12 | 1.70 | 2.52 | 11.02 | 2.65 | .70 | .15 |
| 6 | .86 | .67 | .62 | 1.05 | 1.00 | 1.57 | 1.84 | 2.61 | 9.35 | 2.85 | .70 | .08 |
| 7 | .85 | .67 | .66 | 1.08 | .93 | 1.35 | 2.20 | 2.95 | 9.50 | 2.80 | .70 | .30 |
| 8 | .79 | .62 | .60 | 1.10 | .93 | 1.35 | 2.30 | 3.32 | 7.40 | 2.71 | .67 | .34 |
| 9 | .87 | .62 | .62 | 1.10 | .94 | 1.25 | 2.31 | 3.19 | 5.70 | 2.66 | .67 | .23 |
| 10 | .90 | .90 | .59 | 1.20 | .95 | 1.17 | 2.05 | 3.80 | 6.11 | 2.63 | .64 | .15 |
| 11 | .85 | .70 | .61 | 1.04 | .94 | 1.13 | 1.86 | 4.50 | 5.95 | 2.68 | .58 | .08 |
| 12 | .81 | .68 | .60 | 1.02 | .92 | 1.13 | 1.76 | 4.25 | 6.05 | 2.79 | .58 | .02 |
| 13 | .81 | .75 | .55 | .98 | .92 | 1.15 | 1.65 | 4.85 | 5.48 | 2.55 | .60 | — .02 |
| 14 | .80 | .75 | .55 | .98 | .93 | 1.08 | 1.70 | 4.98 | 5.27 | 2.28 | .58 | — .05 |
| 15 | .77 | .83 | .55 | .90 | .95 | 1.20 | 1.80 | 5.31 | 5.00 | 2.10 | .53 | — .10 |
| 16 | .76 | .84 | .55 | .90 | .92 | 1.17 | 1.92 | 5.60 | 4.75 | 2.05 | .49 | — .10 |
| 17 | .73 | .82 | .56 | .84 | .94 | 1.15 | 1.88 | 6.15 | 4.90 | 2.75 | .45 | — .15 |
| 18 | .71 | .80 | .55 | .80 | 1.00 | 1.18 | 1.90 | 6.41 | 5.02 | 2.71 | .39 | — .17 |
| 19 | .70 | .82 | .56 | .78 | 1.01 | 1.35 | 1.72 | 6.80 | 5.04 | 2.95 | .34 | — .20 |
| 20 | .69 | .80 | .60 | .78 | .95 | 1.45 | 1.58 | 5.44 | 4.95 | 2.58 | .30 | — .24 |
| 21 | .69 | .79 | .55 | .82 | .95 | 1.37 | 1.54 | 4.50 | 4.42 | 2.13 | .31 | — .24 |
| 22 | .68 | .74 | .56 | .83 | .85 | 1.15 | 1.48 | ..... | 4.00 | 1.86 | .30 | — .20 |
| 23 | .67 | .71 | .56 | .82 | .94 | 1.27 | 1.49 | 3.80 | 3.56 | 1.65 | .30 | — .20 |
| 24 | .67 | .71 | .60 | .78 | .82 | 1.45 | 1.75 | 3.86 | 3.18 | 1.50 | .30 | — .20 |
| 25 | .67 | .72 | .60 | .78 | .75 | 1.45 | 1.72 | 4.15 | 3.08 | 1.39 | .30 | — .20 |
| 26 | .65 | .72 | .55 | .93 | .84 | 1.45 | 1.82 | 3.72 | 3.25 | 1.30 | .30 | — .24 |
| 27 | .65 | .70 | .58 | .94 | .83 | 1.36 | 1.83 | 4.10 | 3.32 | 1.21 | .30 | — .24 |
| 28 | .67 | .68 | .70 | .97 | .80 | 1.47 | 2.05 | 6.62 | 3.42 | 1.21 | .30 | — .26 |
| 29 | .69 | .67 | .88 | .97 | .83 | 1.66 | 2.20 | 6.92 | 3.25 | 1.15 | .23 | ..... |
| 30 | .72 | .67 | .80 | .96 | ..... | 1.47 | 2.19 | 7.22 | 3.00 | 1.10 | .15 | ..... |
| 31 | .70 | ..... | .88 | .96 | ..... | 1.37 | ..... | 7.10 | ..... | 1.05 | .08 | ..... |

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | |
| 1 | ..... | 0.23 | +0.48 | 0.41 | 0.52 | 4.60 | 2.93 | 5.42 | 2.20 | 3.15 |
| 2 | ..... | .09 | .48 | .41 | .50 | 2.96 | 2.73 | 5.15 | 2.15 | 2.30 |
| 3 | ..... | .10 | .50 | .35 | .56 | 2.40 | 2.98 | 5.20 | 1.90 | 2.02 |
| 4 | ..... | .12 | .50 | .32 | .66 | 2.12 | 3.73 | 5.41 | 1.60 | 1.75 |
| 5 | ..... | .10 | .57 | .28 | .75 | 2.78 | 4.37 | 6.31 | 1.61 | 1.53 |
| 6 | 0.73 | .08 | .40 | .35 | .95 | 2.31 | 5.09 | 7.24 | 1.44 | 1.40 |
| 7 | 1.15 | — .06 | .48 | .32 | 1.00 | 2.10 | 6.22 | 6.69 | 1.32 | 1.31 |
| 8 | .64 | — .10 | .53 | .32 | 1.11 | 2.00 | 5.37 | 6.34 | 1.26 | 1.25 |
| 9 | .60 | — .14 | .57 | .34 | 1.24 | 2.10 | 5.40 | 6.35 | 1.25 | 1.20 |
| 10 | .76 | — .21 | .57 | .34 | 1.33 | 2.78 | 5.82 | 5.00 | 1.44 | 1.10 |
| 11 | .60 | — .20 | .57 | .34 | 1.33 | 2.95 | 5.74 | 4.50 | 1.42 | 1.00 |
| 12 | .60 | — .17 | .57 | .35 | 1.11 | 3.02 | 5.22 | 4.50 | 1.25 | .93 |
| 13 | .60 | — .19 | .59 | .42 | 1.00 | 3.02 | 4.68 | 5.44 | 1.08 | .93 |
| 14 | .73 | — .20 | .60 | .42 | .95 | 2.87 | 4.47 | 5.70 | .96 | 1.20 |
| 15 | .50 | — .10 | .79 | .46 | .83 | 2.48 | 4.95 | 5.00 | .90 | 1.05 |
| 16 | .50 | — .10 | .74 | .66 | .83 | 2.44 | 5.50 | 5.10 | .86 | .93 |
| 17 | .56 | — .10 | .80 | .72 | .95 | 2.40 | 6.80 | 4.70 | .80 | .93 |
| 18 | .50 | — .08 | .85 | .66 | 1.18 | 2.49 | 8.35 | 4.31 | .78 | .89 |
| 19 | .42 | — .06 | .76 | .42 | 1.13 | 2.20 | 5.47 | 4.20 | .74 | .85 |
| 20 | .45 | — .00 | .76 | .28 | 1.06 | 2.45 | 5.41 | 3.85 | .68 | .70 |
| 21 | .36 | — .12 | .78 | .32 | 1.00 | 2.40 | 5.65 | 4.08 | .66 | .70 |
| 22 | .40 | — .16 | .80 | .25 | 1.16 | 2.94 | 6.52 | 4.20 | 1.12 | .73 |
| 23 | .40 | + .10 | .82 | .17 | 1.07 | 3.15 | 7.55 | 3.80 | 1.18 | .75 |
| 24 | .32 | — .12 | .84 | .25 | 1.06 | 3.40 | 7.08 | 4.02 | 1.22 | .65 |
| 25 | .28 | — .25 | .86 | .25 | 1.00 | 3.91 | 7.80 | 3.10 | 1.60 | .54 |
| 26 | .28 | — .20 | .88 | .28 | 1.07 | 4.55 | 9.30 | 3.55 | 1.86 | .50 |
| 27 | .30 | — .20 | .88 | .23 | 1.22 | 4.87 | 7.15 | 3.96 | 2.95 | .48 |
| 28 | .28 | — .20 | .94 | .17 | 1.47 | 4.22 | 7.20 | 3.87 | 2.60 | .42 |
| 29 | .28 | — .20 | .90 | ..... | 1.49 | 3.90 | 5.78 | 4.10 | 2.70 | .38 |
| 30 | .25 | — .20 | .93 | ..... | 2.24 | 3.37 | 5.60 | 3.97 | 3.72 | .34 |
| 31 | ..... | — .20 | .35 | ..... | 2.78 | ..... | 5.50 | ..... | 4.02 | ..... |

*Daily discharge, in second-feet, of Tuolumne River at Hetch Hetchy cabin, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | ..... | 67 | 72 | 58 | 342 | 231 | 1,650 | 1,710 | 2,270 | 4,420 | 1,220 | 245 |
| 2 | ..... | 65 | 68 | 54 | 345 | 287 | 1,560 | 1,610 | 3,140 | 5,030 | 1,100 | 206 |
| 3 | ..... | 64 | 131 | 57 | 749 | 517 | 1,770 | 1,910 | 4,470 | 5,550 | 1,050 | 206 |
| 4 | ..... | 61 | 142 | 62 | 770 | 543 | 1,380 | 2,360 | 5,700 | 5,620 | 1,020 | 173 |
| 5 | ..... | 58 | 133 | 56 | 593 | 479 | 1,620 | 3,020 | 6,370 | 5,900 | 953 | 173 |
| 6 | ..... | 54 | 124 | 56 | 546 | 425 | 1,250 | 2,010 | 6,740 | 6,080 | 878 | 173 |
| 7 | ..... | 53 | 193 | 54 | 482 | 578 | 1,090 | 1,890 | 5,410 | 5,950 | 823 | 134 |
| 8 | ..... | 38 | 214 | 54 | 452 | 669 | 1,100 | 1,890 | 4,910 | 5,100 | 798 | 134 |
| 9 | ..... | 38 | 179 | 214 | 430 | 657 | 1,010 | 2,010 | 5,580 | 4,640 | 755 | 112 |
| 10 | 34 | 53 | 398 | 136 | 450 | 528 | 1,000 | 1,920 | 6,770 | 4,870 | 747 | 112 |
| 11 | 67 | 56 | 392 | 104 | 396 | 524 | 862 | 2,220 | 7,810 | 4,430 | 700 | 112 |
| 12 | 151 | 97 | 253 | 126 | 379 | 533 | 771 | 2,440 | 8,550 | 4,640 | 626 | 109 |
| 13 | 126 | 95 | 179 | 165 | 434 | 513 | 661 | 2,110 | 8,760 | 4,840 | 585 | 109 |
| 14 | 104 | 87 | 156 | 156 | 383 | 504 | 705 | 2,080 | 8,080 | 5,060 | 543 | 109 |
| 15 | 126 | 83 | 146 | 179 | 373 | 525 | 710 | 1,750 | 8,230 | 5,690 | 533 | 84 |
| 16 | 144 | 71 | 115 | 144 | 361 | 581 | 750 | 1,560 | 9,010 | 5,290 | 471 | 84 |
| 17 | 126 | 67 | 126 | 156 | 342 | 668 | 900 | 1,500 | 8,740 | 5,800 | 453 | 84 |
| 18 | 146 | 37 | 112 | 189 | 345 | 735 | 1,090 | 1,490 | 9,250 | 5,000 | 462 | 84 |
| 19 | 138 | 92 | 105 | 144 | 342 | 716 | 1,280 | 2,150 | 9,140 | 3,990 | 415 | 84 |
| 20 | 129 | 87 | 109 | 812 | 319 | 758 | 1,290 | 2,650 | 9,140 | 3,280 | 344 | 72 |
| 21 | 122 | 104 | 91 | 547 | 295 | 719 | 1,290 | 3,080 | 8,170 | 2,640 | 330 | 72 |
| 22 | 121 | 104 | 95 | 360 | 294 | 754 | 1,480 | 4,010 | 7,360 | 2,390 | 315 | 87 |
| 23 | 119 | 92 | 89 | 253 | 316 | 961 | 1,920 | 5,100 | 6,190 | 2,610 | 301 | 145 |
| 24 | 109 | 119 | 87 | 709 | 307 | 842 | 2,110 | 4,610 | 4,760 | 2,590 | 286 | 111 |
| 25 | 102 | 102 | 84 | 709 | 288 | 928 | 2,370 | 3,380 | 4,170 | 2,260 | 271 | 90 |
| 26 | 95 | 83 | 66 | 462 | 251 | 969 | 2,540 | 2,700 | 5,790 | 1,770 | 256 | 85 |
| 27 | 95 | 72 | 66 | 376 | 250 | 962 | 1,830 | 2,840 | 7,020 | 1,620 | 256 | 73 |
| 28 | 83 | 88 | 68 | 342 | 228 | 1,080 | 1,520 | 3,010 | 6,830 | 1,590 | 256 | 67 |
| 29 | 76 | 70 | 72 | 4,420 | ..... | 1,190 | 1,350 | 3,160 | 5,900 | 1,520 | 249 | 59 |
| 30 | 77 | 72 | 62 | 5,890 | ..... | 1,330 | 1,430 | 2,650 | 4,950 | 1,400 | 249 | 72 |
| 31 | 77 | ..... | 64 | 2,840 | ..... | 1,550 | ..... | 2,360 | ..... | 1,260 | 249 | ..... |
| 1911–12. | | | | | | | | | | | | |
| 1 | 162 | 52 | 49 | 90 | 113 | 93 | 295 | 716 | 5,470 | 1,010 | 263 | 59 |
| 2 | 103 | 52 | 49 | 90 | 116 | 98 | 430 | 594 | 5,690 | 928 | 248 | 59 |
| 3 | 87 | 53 | 49 | 90 | 108 | 88 | 520 | 548 | 6,880 | 847 | 226 | 59 |
| 4 | 90 | 46 | 49 | 90 | 110 | 104 | 486 | 644 | 6,320 | 649 | 186 | 85 |
| 5 | 84 | 55 | 49 | 90 | 111 | 164 | 400 | 800 | 6,890 | 803 | 181 | 69 |
| 6 | 84 | 53 | 49 | 90 | 124 | 314 | 439 | 807 | 5,320 | 1,040 | 181 | 59 |
| 7 | 77 | 53 | 49 | 90 | 107 | 231 | 576 | 933 | 5,450 | 930 | 181 | 93 |
| 8 | 67 | 45 | 38 | 90 | 106 | 220 | 582 | 1,000 | 4,050 | 826 | 171 | 102 |
| 9 | 84 | 45 | 38 | 90 | 110 | 189 | 617 | 961 | 3,440 | 836 | 171 | 85 |
| 10 | 89 | 102 | 38 | 90 | 118 | 183 | 508 | 1,270 | 3,610 | 905 | 169 | 69 |
| 11 | 77 | 56 | 41 | 90 | 109 | 169 | 433 | 1,900 | 3,400 | 810 | 161 | 59 |
| 12 | 71 | 51 | 41 | 90 | 108 | 172 | 437 | 1,730 | 3,510 | 925 | 161 | 64 |
| 13 | 73 | 62 | 28 | 90 | 101 | 170 | 366 | 2,130 | 3,070 | 850 | 160 | 55 |
| 14 | 73 | 62 | 28 | 90 | 108 | 153 | 374 | 2,220 | 2,470 | 692 | 161 | 51 |
| 15 | 71 | 75 | 28 | 90 | 109 | 190 | 419 | 2,570 | 2,360 | 664 | 139 | 46 |
| 16 | 71 | 78 | 29 | 95 | 105 | 184 | 534 | 2,840 | 2,010 | 640 | 130 | 46 |
| 17 | 57 | 80 | 29 | 78 | 109 | 177 | 433 | 3,170 | 2,290 | 922 | 121 | 45 |
| 18 | 56 | 75 | 28 | 74 | 129 | 186 | 509 | 3,430 | 2,350 | 825 | 111 | 42 |
| 19 | 56 | 80 | 28 | 71 | 133 | 249 | 382 | 3,690 | 2,440 | 1,010 | 102 | 39 |
| 20 | 54 | 75 | 41 | 71 | 116 | 274 | 331 | 2,720 | 2,420 | 861 | 93 | 34 |
| 21 | 54 | 75 | 23 | 75 | 113 | 251 | 304 | 1,900 | 1,910 | 679 | 99 | 34 |
| 22 | 52 | 62 | 23 | 77 | 89 | 196 | 297 | 1,600 | 1,720 | 556 | 93 | 39 |
| 23 | 52 | 56 | 23 | 75 | 109 | 223 | 305 | 1,380 | 1,520 | 476 | 93 | 39 |
| 24 | 52 | 53 | 14 | 70 | 81 | 294 | 400 | 1,470 | 1,170 | 398 | 93 | 39 |
| 25 | 52 | 56 | 14 | 70 | 71 | 294 | 391 | 1,700 | 1,030 | 357 | 93 | 39 |
| 26 | 44 | 56 | 29 | 111 | 86 | 278 | 432 | 1,200 | 1,230 | 317 | 93 | 34 |
| 27 | 46 | 57 | 18 | 109 | 81 | 242 | 427 | 1,560 | 1,250 | 304 | 93 | 34 |
| 28 | 53 | 53 | 25 | 119 | 77 | 290 | 513 | 3,500 | 1,300 | 304 | 93 | 31 |
| 29 | 54 | 53 | 39 | 119 | 84 | 367 | 579 | 3,920 | 1,240 | 293 | 85 | 33 |
| 30 | 55 | 53 | 33 | 112 | ..... | 290 | 560 | 4,190 | 1,080 | 283 | 69 | 33 |
| 31 | 55 | ..... | 37 | 112 | ..... | 251 | ..... | 4,280 | ..... | 275 | 59 | ..... |

*Daily discharge, in second-feet, of Tuolumne River at Hetch Hetchy cabin, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | |
| 1 | ..... | 96 | 35 | 111 | 86 | 1,370 | 780 | 2,310 | 495 | 890 |
| 2 | ..... | 70 | 35 | 111 | 77 | 800 | 690 | 2,110 | 480 | 535 |
| 3 | ..... | 72 | 36 | 103 | 92 | 565 | 820 | 2,150 | 395 | 430 |
| 4 | ..... | 81 | 36 | 96 | 103 | 470 | 1,200 | 2,300 | 305 | 350 |
| 5 | ..... | 72 | 31 | 90 | 122 | 670 | 1,600 | 2,950 | 310 | 295 |
| 6 | 193 | 68 | 24 | 103 | 146 | 535 | 2,070 | 3,620 | 275 | 260 |
| 7 | 292 | ..... | 35 | 96 | 158 | 456 | 2,870 | 3,220 | 240 | 240 |
| 8 | 175 | ..... | 31 | 96 | 173 | 425 | 2,260 | 2,980 | 225 | 220 |
| 9 | 162 | ..... | 31 | 98 | 202 | 456 | 2,280 | 2,250 | 220 | 212 |
| 10 | 201 | ..... | 31 | 98 | 230 | 670 | 2,580 | 2,010 | 275 | 187 |
| 11 | 162 | ..... | 31 | 98 | 230 | 795 | 2,520 | 1,690 | 260 | 165 |
| 12 | 162 | ..... | 31 | 103 | 173 | 835 | 2,170 | 1,690 | 220 | 160 |
| 13 | 162 | ..... | 36 | 110 | 158 | 835 | 1,800 | 2,320 | 180 | 160 |
| 14 | 193 | ..... | 39 | 110 | 146 | 750 | 1,660 | 2,500 | 165 | 212 |
| 15 | 148 | ..... | 52 | 121 | 134 | 600 | 1,980 | 2,010 | 150 | 180 |
| 16 | 148 | ..... | 50 | 151 | 134 | 575 | 2,350 | 2,080 | 140 | 160 |
| 17 | 168 | ..... | 54 | 176 | 146 | 565 | 3,300 | 1,820 | 130 | 160 |
| 18 | 148 | ..... | 63 | 151 | 195 | 595 | 4,460 | 1,560 | 128 | 145 |
| 19 | 132 | ..... | 65 | 110 | 182 | 498 | 2,340 | 1,500 | 123 | 140 |
| 20 | 142 | ..... | 65 | 90 | 171 | 575 | 2,300 | 1,280 | 105 | 115 |
| 21 | 128 | ..... | 70 | 96 | 158 | 565 | 2,480 | 1,480 | 101 | 115 |
| 22 | 140 | ..... | 75 | 92 | 193 | 790 | 3,080 | 1,500 | 200 | 120 |
| 23 | 140 | ..... | 80 | 75 | 174 | 885 | 3,820 | 1,250 | 205 | 125 |
| 24 | 119 | ..... | 85 | 92 | 171 | 1,020 | 3,500 | 1,380 | 215 | 110 |
| 25 | 106 | ..... | 90 | 92 | 158 | 1,320 | 4,050 | 860 | 305 | 90 |
| 26 | 106 | ..... | 96 | 90 | 174 | 1,720 | 5,200 | 1,100 | 390 | 82 |
| 27 | 103 | ..... | 96 | 86 | 209 | 1,920 | 3,550 | 1,350 | 800 | 80 |
| 28 | 106 | ..... | 103 | 75 | 272 | 1,500 | 3,600 | 1,300 | 652 | 70 |
| 29 | 106 | 36 | 94 | ..... | 281 | 1,310 | 2,560 | 1,440 | 690 | 65 |
| 30 | 102 | 36 | 95 | ..... | 503 | 1,000 | 2,440 | 1,360 | 1,200 | 60 |
| 31 | ..... | 36 | 110 | ..... | 695 | ..... | 2,350 | ..... | 1,380 | ..... |

*Monthly discharge of Tuolumne River at Hetch Hetchy cabin, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1911. | | | | |
| October | 151 | | 88.0 | 5,410 |
| November | 119 | 38 | 76.0 | 4,520 |
| December | 398 | 62 | 135 | 8,300 |
| January | 5,890 | 54 | 641 | 39,400 |
| February | 770 | 228 | 395 | 21,900 |
| March | 1,550 | 231 | 718 | 44,100 |
| April | 2,540 | 661 | 1,340 | 79,700 |
| May | 5,100 | 1,490 | 2,490 | 153,000 |
| June | 9,250 | 2,270 | 6,640 | 395,000 |
| July | 6,080 | 1,260 | 3,960 | 243,000 |
| August | 1,220 | 249 | 564 | 34,700 |
| September | 245 | 59 | 115 | 6,840 |
| The year | 9,250 | | 1,430 | 1,040,000 |
| 1911–12. | | | | |
| October | 162 | 44 | 69.5 | 4,270 |
| November | 102 | 45 | 60.8 | 3,620 |
| December | 49 | 14 | 34.1 | 2,100 |
| January | 119 | 70 | 89.9 | 5,530 |
| February | 133 | 71 | 105 | 6,040 |
| March | 367 | 88 | 212 | 13,000 |
| April | 617 | 295 | 443 | 26,400 |
| May | 4,280 | 548 | 1,980 | 122,000 |
| June | 6,890 | 1,030 | 3,100 | 184,000 |
| July | 1,0 0 | 275 | 684 | 42,100 |
| August | 263 | 59 | 138 | 8,480 |
| September | 102 | 31 | 52.5 | 3,120 |
| The year | 6,890 | 14 | 579 | 421,000 |
| 1912–13. | | | | |
| November 6–30 | 292 | 102 | 150 | 7,440 |
| December | | | 50.2 | 3,090 |
| January | 110 | 24 | 58.2 | 3,580 |
| February | 176 | 75 | 104 | 5,780 |
| March | 695 | 77 | 195 | 12,000 |
| April | 1,920 | 425 | 836 | 49,700 |
| May | 5,200 | 690 | 2,540 | 156,000 |
| June | 3,620 | 860 | 1,910 | 114,000 |
| August | 1,380 | 101 | 354 | 21,800 |
| September | 890 | 60 | 204 | 12,100 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### TUOLUMNE RIVER AT HETCH HETCHY DAM SITE, NEAR SEQUOIA, CAL.

LOCATION.—In the NW. ¼ sec. 16, T. 1 N., R. 20 E., at Hetch Hetchy dam site, in Yosemite National Park, about 1½ miles below mouth of Falls Creek, and about 11 miles northeast of Sequoia.

RECORDS AVAILABLE.—December 1, 1910, to September 30, 1913. Record at dam site is fragmentary. Record of Falls Creek obtained whem dam site record was discontinued. Sum of discharge of Tuolumne River at Hetch Hetchy cabin and of Falls Creek is practically same as discharge at dam site.

DRAINAGE AREA.—459 square miles.[1]

GAGE.—Lietz water-stage recorder and vertical staff on left bank at dam site. (No record of gages used previous to 1913.)

CHANNEL.—Sand and fine gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet above gage or by wading.

WINTER FLOW.—Discharge relation somewhat affected by ice.

COOPERATION.—Complete record furnished by city of San Francisco, through M. M. O'Shaughnessy, city engineer.

[1] Freeman, J. R., The Hetch Hetchy water supply for San Francisco, p. 24, 1912.

*Daily gage height, in feet, of Tuolumne River at Hetch Hetchy dam site, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | |
| 1 | 0.35 | 0.12 | 8.80 | 2.71 | 10.46 | 10.90 | 13.56 | 18.09 |
| 2 | .26 | .11 | 7.16 | 2.96 | 11.90 | 10.90 | 15.76 | 18.89 |
| 3 | 1.33 | .13 | 6.30 | 4.26 | 11.52 | 11.20 | 18.60 | 19.78 |
| 4 | 1.36 | .14 | 6.30 | 4.47 | 9.20 | 12.90 | 20.04 | 19.00 |
| 5 | 1.36 | .12 | 5.03 | 4.64 | 10.30 | 14.80 | 20.97 | 19.21 |
| 6 | .69 | .12 | 4.80 | 4.28 | 9.20 | 12.40 | 20.86 | 20.90 |
| 7 | 1.75 | .12 | 4.64 | 4.69 | 8.16 | 12.00 | 18.70 | 18.40 |
| 8 | 2.02 | .11 | 4.42 | 5.51 | 8.02 | 11.80 | 18.25 | 18.10 |
| 9 | 1.45 | 2.00 | 4.29 | 5.47 | 9.30 | 11.80 | 19.60 | 19.00 |
| 10 | 3.96 | 1.37 | 4.19 | 6.35 | 7.31 | 11.40 | 21.12 | 19.00 |
| 11 | 4.05 | .67 | 4.05 | 6.35 | 6.85 | 12.00 | 23.08 | 17.80 |
| 12 | 2.74 | .73 | 4.00 | 4.60 | 6.60 | 13.60 | 24.07 | 19.00 |
| 13 | 1.90 | 1.13 | 4.13 | 4.50 | 6.15 | 12.90 | 24.46 | 18.75 |
| 14 | 1.62 | 1.55 | 4.00 | 4.45 | 5.94 | 12.30 | 22.91 | 18.95 |
| 15 | 1.42 | 1.97 | 4.67 | 4.35 | 6.00 | 11.00 | 23.36 | 19.76 |
| 16 | .71 | 1.19 | 3.49 | 4.69 | 6.30 | 10.00 | 23.28 | 19.22 |
| 17 | .70 | 1.55 | 3.60 | 5.51 | 6.90 | 9.90 | 24.43 | 17.67 |
| 18 | .69 | 1.63 | 3.42 | 5.95 | 8.20 | 9.50 | 24.80 | 16.15 |
| 19 | .67 | 1.19 | 3.60 | 5.87 | 9.10 | 12.20 | 24.40 | 16.27 |
| 20 | .70 | 6.60 | 3.30 | 6.07 | 9.18 | 13.90 | 23.70 | 15.10 |
| 21 | .49 | 4.98 | 3.07 | 5.93 | 9.16 | 15.40 | 22.80 | 13.50 |
| 22 | .50 | 3.62 | 3.05 | 6.27 | 9.71 | 17.60 | 21.84 | 12.55 |
| 23 | .51 | 2.91 | 3.30 | 7.44 | 11.11 | 19.30 | 19.98 | 12.33 |
| 24 | .50 | 5.74 | 3.18 | 7.00 | 12.23 | 18.60 | 17.90 | 12.53 |
| 25 | .50 | 5.72 | 3.02 | 7.36 | 12.96 | 16.20 | 19.00 | 12.50 |
| 26 | .42 | 4.31 | 2.80 | 7.50 | 13.32 | 13.90 | 20.70 | 10.95 |
| 27 | .41 | 3.70 | 2.80 | 7.52 | 11.94 | 14.50 | 22.26 | 10.60 |
| 28 | .32 | 3.62 | 2.55 | 8.30 | 10.15 | 14.90 | 20.60 | 10.50 |
| 29 | .42 | 16.30 | ..... | 8.80 | 9.37 | 15.20 | 20.70 | 10.10 |
| 30 | .37 | 23.70 | ..... | 9.28 | 9.83 | 14.50 | 19.20 | 9.45 |
| 31 | .36 | 14.10 | ..... | 10.03 | ..... | 12.80 | ..... | 9.02 |

| Day. | June. | July. | Day. | June. | July. | Day. | June. | July. |
|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | 1911–12. | | | 1911–12. | | |
| 1 | 20.1 | 7.12 | 11 | 14.25 | 6.22 | 21 | 11.49 | ..... |
| 2 | 20.0 | 6.97 | 12 | 14.1 | 6.2 | 22 | 9.41 | ..... |
| 3 | 21.4 | 6.78 | 13 | 14.2 | 5.48 | 23 | 8.0 | ..... |
| 4 | 21.65 | 7.16 | 14 | 14.63 | 5.17 | 24 | 7.23 | ..... |
| 5 | 19.1 | 7.17 | 15 | 13.02 | ..... | 25 | 7.43 | ..... |
| 6 | 19.25 | 7.17 | 16 | 12.17 | ..... | 26 | 8.1 | ..... |
| 7 | 19.14 | 6.98 | 17 | 11.81 | ..... | 27 | 8.58 | ..... |
| 8 | 15.1 | 6.97 | 18 | 12.65 | ..... | 28 | 8.91 | ..... |
| 9 | 13.0 | 6.5 | 19 | 13.14 | ..... | 29 | 8.56 | ..... |
| 10 | 14.1 | 6.2 | 20 | 13.33 | ..... | 30 | 7.84 | ..... |
| | | | | | | 31 | ..... | ..... |

*Daily gage height, in feet, of Tuolumne River at Hetch Hetchy dam site, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | |
| 1 | 1.05 | 1.07 | ..... | 5.90 | 13.25 | 8.10 | 3.85 | 6.37 |
| 2 | 1.03 | 1.15 | ..... | 5.40 | 12.30 | 7.75 | 3.65 | 4.20 |
| 3 | 1.13 | 1.15 | ..... | 6.24 | 12.60 | 7.47 | 2.90 | 3.30 |
| 4 | 1.17 | 1.15 | ..... | 8.20 | 13.28 | 6.56 | 2.50 | 2.70 |
| 5 | 1.17 | 1.15 | ..... | 10.45 | 14.30 | 6.40 | 2.43 | 2.20 |
| 6 | 1.17 | ..... | ..... | 12.30 | 16.82 | 6.72 | 2.07 | 2.07 |
| 7 | 1.17 | ..... | ..... | 12.50 | 15.85 | 6.95 | 2.00 | 1.70 |
| 8 | 1.17 | ..... | 4.05 | 12.70 | 14.47 | 6.10 | 1.66 | 1.77 |
| 9 | 1.17 | ..... | ..... | 12.72 | 12.37 | 5.86 | 1.60 | 1.40 |
| 10 | 1.15 | ..... | ..... | 14.10 | 11.05 | 5.38 | 1.94 | 1.17 |
| 11 | 1.12 | ..... | ..... | 13.80 | 9.75 | 4.52 | 1.80 | 2.00 |
| 12 | 1.07 | ..... | ..... | 12.30 | 11.15 | 4.00 | 1.65 | 1.97 |
| 13 | 1.06 | ..... | ..... | 10.88 | 12.55 | 3.70 | 1.20 | 1.97 |
| 14 | 1.05 | ..... | ..... | 10.20 | 12.70 | 3.50 | .85 | 2.17 |
| 15 | 1.05 | ..... | 5.35 | 11.70 | 12.15 | 2.85 | .75 | 2.04 |
| 16 | 1.04 | ..... | 5.15 | 13.50 | 11.28 | 2.85 | 3.05 | 1.97 |
| 17 | 1.03 | ..... | 5.15 | 15.90 | 10.20 | 2.74 | 3.05 | 1.83 |
| 15 | 1.02 | ..... | 5.15 | 18.37 | 9.45 | 2.70 | 2.99 | 1.80 |
| 19 | 1.01 | ..... | 4.44 | 13.37 | 9.20 | 2.75 | 2.94 | 1.77 |
| 20 | 1.01 | ..... | 5.04 | 13.37 | 8.20 | 2.95 | 2.90 | 1.73 |
| 21 | 1.01 | ..... | 5.10 | 13.37 | 8.77 | 3.15 | 2.87 | 1.73 |
| 22 | 1.01 | ..... | 6.35 | 15.50 | 8.92 | 3.37 | 3.42 | 1.75 |
| 23 | 1.01 | ..... | 6.85 | 17.65 | 7.97 | 6.94 | 3.46 | 1.75 |
| 24 | 1.01 | ..... | 7.63 | 16.80 | 8.10 | 5.05 | 3.42 | 1.66 |
| 25 | 1.01 | ..... | 8.77 | 16.80 | 7.10 | 5.65 | 3.90 | 1.60 |
| 26 | 1.01 | ..... | 10.45 | 18.37 | 8.00 | 7.60 | 3.90 | 1.55 |
| 27 | 1.02 | ..... | 11.50 | 17.00 | 8.74 | 6.87 | 4.35 | 1.52 |
| 28 | 1.05 | ..... | 9.70 | 17.00 | 8.12 | 6.40 | 4.10 | 1.50 |
| 29 | 1.07 | ..... | 8.72 | 14.10 | 8.58 | 7.88 | 4.15 | 1.45 |
| 30 | 1.15 | ..... | 7.25 | 14.10 | 8.20 | 6.38 | 5.10 | 1.40 |
| 31 | 1.13 | ..... | ..... | 13.25 | ..... | 4.95 | 9.15 | ..... |

*Daily discharge, in second-feet, of Tuolumne River at Hetch Hetchy dam site, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | 102 | 73 | 977 | 351 | 1,860 | 2,050 | 2,530 | 5,420 | 1,460 | 271 |
| 2 | 89 | 70 | 860 | 365 | 2,340 | 2,090 | 3,420 | 5,940 | 1,320 | 227 |
| 3 | 210 | 76 | 978 | 550 | 2,140 | 2,410 | 4,960 | 6,590 | 1,260 | 227 |
| 4 | 208 | 80 | 978 | 618 | 1,560 | 3,190 | 6,540 | 6,110 | 972 | 189 |
| 5 | 212 | 73 | 688 | 620 | 1,860 | 3,830 | 7,460 | 6,220 | 910 | 189 |
| 6 | 157 | 73 | 645 | 557 | 1,560 | 2,610 | 8,070 | 7,290 | 805 | 189 |
| 7 | 247 | 73 | 639 | 638 | 1,190 | 2,330 | 6,770 | 7,220 | 670 | 150 |
| 8 | 276 | 70 | 575 | 774 | 1,220 | 2,360 | 5,620 | 6,790 | 601 | 150 |
| 9 | 217 | 272 | 556 | 765 | 1,580 | 2,410 | 6,470 | 5,300 | 610 | 118 |
| 10 | 489 | 209 | 550 | 953 | 1,150 | 2,310 | 7,990 | 5,550 | 645 | 118 |
| 11 | 512 | 135 | 515 | 940 | 1,020 | 2,460 | 9,700 | 6,010 | 685 | 118 |
| 12 | 342 | 140 | 512 | 572 | 980 | 3,130 | 10,300 | 5,460 | 707 | 115 |
| 13 | 260 | 217 | 537 | 590 | 900 | 2,770 | 10,600 | 5,270 | 652 | 115 |
| 14 | 224 | 226 | 512 | 585 | 870 | 2,660 | 9,750 | 6,290 | 585 | 115 |
| 15 | 214 | 269 | 630 | 597 | 880 | 2,110 | 9,800 | 6,580 | 530 | 87 |
| 16 | 169 | 215 | 401 | 630 | 930 | 1,790 | 9,980 | 6,040 | 471 | 87 |
| 17 | 140 | 226 | 444 | 774 | 1,020 | 1,720 | 10,600 | 5,400 | 415 | 87 |
| 19 | 138 | 230 | 396 | 865 | 1,310 | 1,770 | 11,400 | 5,390 | 390 | 87 |
| 19 | 151 | 215 | 444 | 840 | 1,530 | 2,600 | 10,800 | 5,170 | 382 | 87 |
| 20 | 140 | 990 | 406 | 880 | 1,560 | 3,420 | 10,400 | 4,250 | 318 | 75 |
| 21 | 120 | 741 | 342 | 850 | 1,550 | 4,300 | 9,870 | 3,320 | 314 | 75 |
| 22 | 120 | 427 | 370 | 933 | 1,750 | 5,370 | 8,190 | 2,720 | 310 | 93 |
| 23 | 125 | 338 | 406 | 1,140 | 2,310 | 6,340 | 6,880 | 2,600 | 306 | 152 |
| 24 | 120 | 810 | 392 | 1,060 | 2,740 | 5,740 | 5,190 | 2,570 | 302 | 114 |
| 25 | 122 | 805 | 339 | 1,090 | 3,030 | 4,300 | 6,080 | 2,480 | 297 | 93 |
| 26 | 110 | 562 | 346 | 1,160 | 3,430 | 3,420 | 7,260 | 2,200 | 290 | 88 |
| 27 | 108 | 461 | 346 | 1,170 | 2,530 | 3,600 | 8,440 | 2,100 | 290 | 76 |
| 28 | 96 | 450 | 308 | 1,300 | 1,900 | 3,920 | 7,570 | 2,030 | 270 | 70 |
| 29 | 110 | 5,360 | ..... | 1,440 | 1,700 | 3,960 | 6,840 | 1,820 | 270 | 62 |
| 30 | 103 | 8,510 | ..... | 1,570 | 1,820 | 3,560 | 6,280 | 1,650 | 270 | 75 |
| 31 | 102 | 4,000 | ..... | 1,770 | ..... | 2,790 | ..... | 1,560 | 270 | ..... |

*Daily discharge, in second-feet, of Tuolumne River at Hetch Hetchy dam site, near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 169 | 52 | 52 | 92 | 143 | 161 | 369 | 872 | 6,240 | 1,040 | 281 | 60 |
| 2 | 109 | 52 | 52 | 93 | 148 | 155 | 525 | 713 | 6,130 | 996 | 265 | 60 |
| 3 | 93 | 53 | 52 | 93 | 140 | 112 | 625 | 654 | 7,120 | 900 | 243 | 62 |
| 4 | 96 | 46 | 52 | 93 | 142 | 137 | 617 | 757 | 7,380 | 1,050 | 201 | 88 |
| 5 | 89 | 55 | 52 | 93 | 143 | 206 | 499 | 926 | 5,660 | 1,030 | 193 | 73 |
| 6 | 89 | 53 | 52 | 92 | 163 | 379 | 555 | 947 | 6,160 | 1,030 | 191 | 62 |
| 7 | 81 | 53 | 52 | 92 | 140 | 281 | 708 | 1,110 | 5,760 | 996 | 191 | 105 |
| 8 | 71 | 45 | 41 | 92 | 135 | 265 | 726 | 1,210 | 3,910 | 934 | 180 | 114 |
| 9 | 88 | 45 | 41 | 93 | 141 | 238 | 768 | 1,210 | 2,810 | 975 | 180 | 94 |
| 10 | 93 | 109 | 41 | 93 | 143 | 224 | 634 | 1,550 | 3,020 | 900 | 177 | 77 |
| 11 | 81 | 63 | 44 | 94 | 135 | 206 | 536 | 2,220 | 3,420 | 915 | 169 | 65 |
| 12 | 75 | 57 | 44 | 94 | 129 | 207 | 536 | 2,090 | 3,220 | 900 | 168 | 71 |
| 13 | 77 | 68 | 30 | 94 | 126 | 207 | 458 | 2,720 | 3,360 | 775 | 168 | 59 |
| 14 | 77 | 68 | 30 | 95 | 134 | 196 | 461 | 2,840 | 3,600 | 700 | 169 | 54 |
| 15 | 74 | 82 | 30 | 95 | 133 | 228 | 509 | 3,200 | 2,850 | 749 | 147 | 49 |
| 16 | 74 | 86 | 31 | 101 | 129 | 221 | 627 | 3,660 | 2,580 | 716 | 138 | 49 |
| 17 | 59 | 88 | 31 | 84 | 136 | 218 | 533 | 3,950 | 2,470 | 1,010 | 128 | 47 |
| 18 | 58 | 82 | 30 | 81 | 166 | 224 | 610 | 4,200 | 2,770 | 912 | 116 | 44 |
| 19 | 58 | 87 | 30 | 78 | 169 | 297 | 467 | 4,450 | 2,880 | 1,090 | 106 | 40 |
| 20 | 55 | 81 | 43 | 87 | 142 | 319 | 402 | 3,260 | 2,960 | 939 | 96 | 35 |
| 21 | 55 | 81 | 25 | 91 | 139 | 297 | 366 | 2,290 | 2,260 | 748 | 102 | 35 |
| 22 | 53 | 68 | 25 | 92 | 109 | 243 | 355 | 1,890 | 1,660 | 617 | 96 | 40 |
| 23 | 53 | 62 | 26 | 90 | 128 | 269 | 365 | 1,610 | 1,250 | 530 | 95 | 40 |
| 24 | 53 | 58 | 17 | 85 | 99 | 352 | 491 | 1,690 | 991 | 442 | 95 | 39 |
| 25 | 53 | 61 | 17 | 83 | 89 | 364 | 472 | 1,930 | 1,070 | 397 | 95 | 39 |
| 26 | 45 | 61 | 32 | 127 | 104 | 342 | 529 | 1,460 | 1,200 | 353 | 95 | 34 |
| 27 | 47 | 62 | 21 | 127 | 95 | 293 | 518 | 1,900 | 1,360 | 337 | 96 | 34 |
| 28 | 54 | 58 | 27 | 138 | 91 | 362 | 623 | 4,020 | 1,380 | 330 | 96 | 31 |
| 29 | 55 | 58 | 41 | 139 | 103 | 448 | 709 | 4,620 | 1,380 | 319 | 88 | 33 |
| 30 | 56 | 58 | 35 | 134 | ..... | 311 | 687 | 4,900 | 1,140 | 307 | 71 | 33 |
| 31 | 56 | ..... | 39 | 135 | ..... | 277 | ..... | 5,000 | ..... | 297 | 60 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 33 | 35 | 115 | 42 | 139 | 105 | 1,540 | 855 | 3,000 | 1,280 | 593 | 950 |
| 2 | 29 | 48 | 87 | 42 | 143 | 89 | 944 | 750 | 2,580 | 1,220 | 562 | 540 |
| 3 | 32 | 48 | 89 | 43 | 132 | 111 | 669 | 915 | 2,700 | 1,150 | 500 | 500 |
| 4 | 44 | 48 | 95 | 42 | 125 | 128 | 574 | 1,300 | 3,010 | 980 | 457 | 487 |
| 5 | 51 | 48 | 82 | 32 | 116 | 151 | 814 | 1,800 | 3,500 | 950 | 449 | 454 |
| 6 | 51 | 233 | 78 | 25 | 129 | 181 | 639 | 2,370 | 4,750 | 1,010 | 380 | 390 |
| 7 | 51 | 428 | 55 | 36 | 116 | 195 | 546 | 2,450 | 4,220 | 1,040 | 360 | 293 |
| 8 | 51 | 230 | 55 | 32 | 115 | 216 | 506 | 2,520 | 3,600 | 900 | 295 | 333 |
| 9 | 51 | 197 | 55 | 32 | 117 | 254 | 560 | 2,580 | 2,600 | 855 | 284 | 263 |
| 10 | 48 | 256 | 55 | 32 | 118 | 293 | 774 | 3,120 | 2,100 | 755 | 350 | 193 |
| 11 | 42 | 213 | 55 | 32 | 124 | 282 | 921 | 3,000 | 1,700 | 605 | 315 | 177 |
| 12 | 35 | 209 | 55 | 32 | 129 | 225 | 979 | 2,370 | 2,130 | 500 | 290 | 171 |
| 13 | 34 | 213 | 55 | 43 | 135 | 201 | 979 | 2,000 | 2,680 | 440 | 235 | 171 |
| 14 | 31 | 244 | 55 | 48 | 135 | 181 | 876 | 1,810 | 2.750 | 400 | 210 | 228 |
| 15 | 31 | 188 | 55 | 63 | 150 | 159 | 750 | 2,230 | 2,500 | 325 | 205 | 190 |
| 16 | 32 | 188 | 55 | 63 | 186 | 163 | 696 | 2,800 | 2,180 | 325 | 141 | 171 |
| 17 | 27 | 208 | 55 | 70 | 211 | 178 | 696 | 3,550 | 1,820 | 315 | 141 | 144 |
| 15 | 28 | 188 | 55 | 79 | 183 | 230 | 696 | 4,830 | 1,620 | 310 | 131 | 135 |
| 19 | 26 | 162 | 55 | 81 | 125 | 225 | 601 | 2,750 | 1,550 | 318 | 121 | 132 |
| 20 | 26 | 175 | 55 | 82 | 105 | 208 | 677 | 2,750 | 1,300 | 335 | 117 | 121 |
| 21 | 26 | 157 | 55 | 88 | 109 | 193 | 710 | 2,750 | 1,450 | 355 | 110 | 121 |
| 22 | 26 | 169 | 55 | 95 | 109 | 230 | 975 | 3,580 | 1,480 | 880 | 236 | 125 |
| 23 | 26 | 169 | 55 | 101 | 90 | 211 | 1,020 | 4,290 | 1,260 | 1,040 | 241 | 125 |
| 24 | 26 | 145 | 55 | 108 | 107 | 208 | 1,160 | 3,630 | 1,280 | 700 | 236 | 109 |
| 25 | 26 | 132 | 55 | 114 | 107 | 195 | 1,460 | 3,630 | 1,080 | 815 | 369 | 93 |
| 26 | 26 | 125 | 55 | 121 | 105 | 211 | 1,840 | 4,830 | 1,260 | 1,180 | 369 | 88 |
| 27 | 28 | 122 | 55 | 123 | 99 | 252 | 2,140 | 3,850 | 1,440 | 1,040 | 850 | 85 |
| 28 | 31 | 125 | 55 | 130 | 90 | 324 | 1,650 | 3,850 | 1,290 | 950 | 700 | 75 |
| 29 | 35 | 125 | 46 | 115 | ..... | 371 | 1,440 | 3,120 | 1,400 | 1,240 | 725 | 68 |
| 30 | 48 | 121 | 42 | 121 | ..... | 647 | 1,110 | 3,120 | 1,300 | 948 | 1,300 | 58 |
| 31 | 44 | ..... | 42 | 136 | ..... | 862 | ..... | 2,600 | ..... | 675 | 1,530 | ..... |

NOTE.—Discharge for September, 1911, all the year ending Sept. 30, 1912, except June 1 to July 14 and Sept. 29–30, 1912, Nov. 6, 1912, to Apr. 7, 1913, and Apr. 9–14, 1913, is the sum of the discharge of Tuolumne River at Hetch Hetchy cabin and of Falls Creek.

*Monthly discharge of Tuolumne River at Hetch Hetchy dam site near Sequoia, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1910–11. | | | | |
| December | 512 | 89 | 185 | 11,400 |
| January | 8,510 | 70 | 851 | 52,300 |
| February | 978 | 308 | 539 | 29,900 |
| March | 1,770 | 351 | 869 | 53,400 |
| April | 3,430 | 870 | 1,670 | 99,400 |
| May | 6,340 | 1,720 | 3,140 | 193,000 |
| June | 11,400 | 2,530 | 7,860 | 468,000 |
| July | 7,290 | 1,560 | 4,620 | 284,000 |
| August | 1,460 | 270 | 566 | 34,800 |
| September | 271 | 62 | 123 | 7,320 |
| The period | | | | 1,230,000 |
| 1911–12. | | | | |
| October | 169 | 45 | 72.5 | 4,460 |
| November | 109 | 45 | 65.1 | 3,870 |
| December | 52 | 17 | 36.6 | 2,250 |
| January | 139 | 78 | 99 | 6,090 |
| February | 169 | 89 | 131 | 7,540 |
| March | 448 | 112 | 259 | 15,900 |
| April | 768 | 355 | 543 | 32,300 |
| May | 5,000 | 654 | 2,380 | 146,000 |
| June | 7,380 | 991 | 3,270 | 195,000 |
| July | 1,090 | 297 | 749 | 46,100 |
| August | 281 | 60 | 145 | 8,920 |
| September | 114 | 31 | 55.6 | 3,310 |
| The year | 7,380 | 17 | 650 | 472,000 |
| 1912–13. | | | | |
| October | 51 | 26 | 35.3 | 2,170 |
| November | 428 | 35 | 165 | 9,820 |
| December | 115 | 42 | 60.8 | 3,740 |
| January | 136 | 25 | 71.1 | 4,370 |
| February | 211 | 90 | 127 | 7,050 |
| March | 862 | 89 | 241 | 14,800 |
| April | 2,140 | 506 | 965 | 57,400 |
| May | 4,830 | 750 | 2,770 | 170,000 |
| June | 4,750 | 1,080 | 2,180 | 130,000 |
| July | 1,280 | 310 | 753 | 46,300 |
| August | 1,530 | 110 | 413 | 25,400 |
| September | 950 | 58 | 233 | 13,900 |
| The year | 4,830 | 25 | 671 | 485,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### TUOLUMNE RIVER NEAR GROVELAND, CAL.

LOCATION.—In the SW. ¼ sec. 24, T. 1 S., R. 17 E., 1 mile below junction with South Fork of Tuolumne River, and about 9 miles east of Groveland.

RECORDS AVAILABLE.—September 2, 1907, to September 30, 1913. (Not complete.)

DRAINAGE AREA.—Not measured.

GAGE.—Gurley electric water-stage recorder on left bank installed January 1, 1913. A staff in two sections is fastened to rock ledge just above intake pipe of gage well. The Yosemite Power Co. has a Leitz water-stage recorder at pool about one-third mile above gage of United States Geological Survey, a short distance above a vertical staff, which is in two sections, on left bank. Leitz recorder was installed in August, 1910.

CHANNEL.—Bowlders and solid rock; probably permanent.

DISCHARGE MEASUREMENTS.—Made from cable one-third mile above gage, near Yosemite Power Co.'s cable.

DIVERSIONS.—See South Fork of Tuolumne River near Groveland.

ACCURACY.—Rating curve well defined and results excellent for periods covered by gage-height record from January 1, 1913. Records September 2, 1907, to December 31, 1912, are from Yosemite Power Co.'s gage; discharge for this period has been computed from a rating curve, developed from the rating curve for the United States Geological Survey gage by means of a fairly well defined relation curve for the two gages. It has been assumed that no change in channel occurred.

COOPERATION.—Gage-height record, September 2, 1907, to November 16, 1912, furnished by Yosemite Power Co., through H. A. Kluegel, chief engineer.

*Discharge measurements of Tuolumne River near Groveland, Cal., during the years ending Sept. 30, 1902, 1910–1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| 1902. | | *Feet.* | *Sec.-ft.* | 1913. | | *Feet.* | *Sec.-ft.* |
| Aug. 27 | ..... | ..... | 172 | Mar. 11 | H. J. Tompkins..... | 3.59 | 754 |
| | | | | Apr. 27 | .....do..... | 7.27 | 4,970 |
| 1910. | | | | May 2 | .....do..... | 4.85 | 1,670 |
| Sept. 13 | J. E. Stewart..... | ..... | 51 | 5 | .....do..... | 6.57 | 3,730 |
| | | | | 6 | .....do..... | 7.72 | 5,650 |
| 1913. | | | | 7 | .....do..... | 8.10 | 6,420 |
| Mar. 7 | H. J. Tompkins..... | 3.13 | 562 | Sept. 6 | .....do..... | 2.66 | 416 |

*Daily gage height, in feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1907. | | 1907. | | 1907. | |
| 1..... | ..... | 11..... | 2.56 | 21..... | ..... |
| 2..... | 2.63 | 12..... | 2.57 | 22..... | ..... |
| 3..... | 2.58 | 13..... | 2.55 | 23..... | ..... |
| 4..... | 2.76 | 14..... | 2.50 | 24..... | 1.79 |
| 5..... | 2.80 | 15..... | 2.35 | 25..... | 1.79 |
| 6..... | 2.72 | 16..... | 2.28 | 26..... | 1.77 |
| 7..... | ..... | 17..... | 2.20 | 27..... | 1.76 |
| 8..... | 2.58 | 18..... | ..... | 28..... | 1.73 |
| 9..... | 2.56 | 19..... | ..... | 29..... | 1.70 |
| 10..... | 2.53 | 20..... | ..... | 30..... | 1.69 |
| | | | | 31..... | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1907–8. | | | | | | | | | | | | |
| 1..... | 1.68 | 2.20 | 1.31 | 2.94 | 2.51 | 3.42 | 3.52 | 7.00 | 6.10 | 4.20 | 2.53 | 1.26 |
| 2..... | 1.67 | 2.09 | 1.31 | 2.80 | 2.55 | 3.37 | 3.37 | 6.90 | 5.40 | 4.10 | 3.08 | 1.15 |
| 2..... | 1.65 | 2.00 | 1.30 | 2.72 | 3.07 | 3.37 | 3.55 | 6.00 | 5.15 | 4.15 | 2.98 | 1.12 |
| 4..... | 1.59 | 2.05 | 1.29 | 2.71 | 2.87 | 3.28 | 3.72 | 5.45 | 5.12 | 4.22 | 2.63 | 1.15 |
| 5..... | ..... | 1.85 | 1.39 | 2.49 | 2.72 | 3.25 | 4.00 | 5.25 | 4.77 | 4.37 | 2.43 | 1.12 |
| 6..... | 1.53 | 1.82 | 1.43 | 2.53 | 2.69 | 3.12 | 4.20 | 5.80 | 5.35 | 4.05 | 2.38 | 1.15 |
| 7..... | ..... | 1.79 | 3.50 | 2.55 | 2.62 | 3.02 | 4.00 | 5.55 | 5.87 | 3.80 | 2.23 | 1.20 |
| 8..... | 1.60 | 1.79 | 2.52 | 2.59 | 2.57 | 2.97 | 3.72 | 5.55 | 6.35 | 3.77 | 2.18 | 1.20 |
| 9..... | 1.59 | 1.80 | 2.48 | 2.64 | 2.70 | 3.15 | 3.82 | 5.20 | 6.70 | 3.55 | 2.03 | 1.15 |
| 10..... | 1.58 | 1.79 | 2.21 | 2.61 | 2.69 | 3.27 | 4.40 | 4.67 | 6.77 | 3.18 | 2.08 | 1.40 |
| 11..... | 1.57 | 1.81 | 2.95 | 2.62 | 2.62 | 3.45 | 4.90 | 4.92 | 6.57 | 3.23 | 1.96 | 1.35 |
| 12..... | 1.56 | 1.79 | 2.64 | 2.63 | 2.62 | 3.62 | 5.50 | 5.15 | 6.65 | 3.36 | 2.03 | 1.35 |
| 13..... | 1.55 | 1.76 | 2.76 | 2.72 | 2.54 | 3.77 | 5.72 | 5.07 | 6.30 | 3.23 | 1.83 | 1.32 |
| 14..... | 1.53 | 1.75 | 2.57 | 3.00 | 2.51 | 4.12 | 6.10 | 4.62 | 6.70 | 3.13 | 1.78 | 1.30 |
| 15..... | 1.51 | 1.71 | 2.44 | 3.12 | 2.57 | 4.31 | 5.87 | 4.55 | 6.62 | 2.98 | 1.71 | 1.25 |
| 16..... | 1.50 | 1.68 | 2.45 | 2.85 | 2.64 | 4.67 | 5.55 | 4.40 | 5.75 | 2.85 | 1.76 | 1.35 |
| 17..... | 1.50 | 1.49 | 2.42 | 2.72 | 2.63 | 4.95 | 5.25 | 4.45 | 5.42 | 2.63 | 1.73 | 1.30 |
| 18..... | 1.51 | 1.48 | 2.33 | 2.64 | 2.59 | 4.70 | 5.40 | 4.86 | 5.30 | 2.61 | 1.68 | 1.45 |
| 19..... | 1.61 | 1.46 | 2.26 | 2.59 | 2.52 | 4.77 | 6.32 | 4.93 | 5.02 | 2.51 | 1.56 | 1.38 |
| 20..... | 1.67 | 1.42 | 2.21 | 2.61 | 2.48 | 4.70 | 6.45 | 4.87 | 4.80 | 2.51 | 1.58 | 1.30 |
| 21..... | 1.69 | 1.44 | 2.22 | 2.60 | 2.49 | 4.75 | 6.47 | 5.15 | ..... | 2.46 | 1.66 | 1.25 |
| 22..... | 1.74 | 1.44 | 2.26 | 2.82 | 2.47 | 4.42 | 6.00 | 5.60 | 4.60 | 2.46 | 1.51 | 1.27 |
| 23..... | 1.76 | 1.45 | 2.25 | 2.78 | 2.44 | 4.56 | 5.47 | 5.92 | 4.62 | 2.51 | 1.51 | ..... |
| 24..... | 1.83 | 1.46 | 2.24 | 3.28 | 2.50 | 4.75 | 5.20 | 6.35 | 4.50 | 2.46 | 1.53 | ..... |
| 25..... | 1.83 | 1.47 | ..... | 3.32 | 2.62 | 4.67 | 5.10 | 6.55 | 4.67 | 2.36 | 1.48 | 1.20 |
| 26..... | 1.92 | 1.42 | 2.80 | 3.03 | 3.12 | 4.30 | 5.32 | 6.52 | 4.65 | 2.31 | 1.46 | 1.40 |
| 27..... | 2.52 | 1.41 | 4.04 | 2.83 | 3.41 | 4.00 | 6.20 | 6.55 | 4.47 | 2.51 | 1.41 | 1.27 |
| 28..... | 2.49 | 1.40 | 3.65 | 2.81 | 3.47 | 3.82 | 6.65 | 6.42 | 4.30 | 2.58 | 1.33 | 1.27 |
| 29..... | 2.28 | 1.40 | 3.10 | 2.73 | 3.35 | 3.75 | 6.95 | 6.60 | 4.22 | 2.53 | 1.36 | 1.15 |
| 30..... | 2.20 | 1.38 | 3.10 | 2.64 | ..... | 3.62 | 6.97 | 6 62 | 4.25 | 2.56 | 1.28 | 1.25 |
| 31..... | 2.24 | ..... | 3.12 | 2.53 | ..... | 3.64 | ..... | ..... | ..... | 2.68 | 1.26 | ..... |

*Daily gage height, in feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913*—Continued.

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Day. | Nov. | Dec. | Jan. | Feb. | Mar. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1908–9. | | | | | | 1908–9. | | | | | |
| 1 | ..... | 1.40 | 1.40 | 3.85 | 3.80 | 16 | ..... | 1.50 | 9.80 | 4.95 | 4.40 |
| 2 | ..... | 1.30 | 1.70 | 3.75 | 3.90 | 17 | ..... | 1.45 | ..... | ..... | 4.35 |
| 3 | ..... | 1.70 | 2.00 | 4.25 | 4.45 | 18 | ..... | 1.35 | 6.20 | 4.75 | 4.35 |
| 4 | ..... | 1.90 | 2.20 | 3.95 | 5.15 | 19 | ..... | 1.40 | 5.40 | 4.60 | 4.25 |
| 5 | ..... | 2.20 | 2.95 | 4.00 | 4.50 | 20 | ..... | 1.40 | 5.45 | 4.50 | 4.15 |
| 6 | ..... | 2.05 | 7.00 | 3.85 | 4.35 | 21 | ..... | 1.50 | 13.60 | 4.30 | 4.05 |
| 7 | ..... | 1.90 | 4.40 | 4.15 | 4.15 | 22 | ..... | 1.45 | 6.65 | 4.05 | 3.90 |
| 8 | ..... | 1.85 | 5.25 | 3.90 | 4.10 | 23 | 1.65 | 1.35 | 5.80 | 3.95 | 3.85 |
| 9 | ..... | 1.85 | 5.05 | 3.75 | 4.05 | 24 | 1.65 | 1.35 | 5.15 | 3.95 | 3.75 |
| 10 | ..... | 1.80 | 3.70 | 3.75 | 3.90 | 25 | 1.40 | 1.30 | 4.80 | 3.80 | 3.65 |
| 11 | ..... | 1.70 | 3.25 | 5.80 | 3.75 | 26 | 1.40 | 1.30 | 4.60 | 3.80 | 3.70 |
| 12 | ..... | 1.65 | 3.30 | 8.25 | 3.65 | 27 | 1.40 | 1.35 | 4.70 | 3.70 | 3.70 |
| 13 | ..... | 1.65 | 6.75 | 5.70 | 3.70 | 28 | 1.30 | 1.35 | 4.35 | 3.75 | 3.65 |
| 14 | ..... | 1.65 | 14.00 | 4.90 | 3.95 | 29 | 1.30 | 1.35 | 4.20 | ..... | 3.90 |
| 15 | ..... | 1.55 | 11.00 | 4.70 | 4.25 | 30 | 1.30 | 1.30 | 3.65 | ..... | 3.75 |
| | | | | | | 31 | ..... | 1.35 | 4.10 | ..... | 3.90 |

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1910. | | | 1910. | | | 1910. | | |
| 1 | ..... | ..... | 11 | ..... | ..... | 21 | 1.45 | 2.00 |
| 2 | ..... | ..... | 12 | ..... | ..... | 22 | ..... | 1.90 |
| 3 | ..... | 120 | 12 | ..... | ..... | 23 | ..... | 1.80 |
| 4 | ..... | ..... | 14 | ..... | ..... | 24 | ..... | 1.70 |
| 5 | ..... | ..... | 15 | ..... | ..... | 25 | ..... | 1.65 |
| 6 | ..... | ..... | 16 | ..... | 4.68 | 26 | ..... | 1.60 |
| 7 | ..... | ..... | 17 | ..... | 3.37 | 27 | 1.45 | 1.55 |
| 8 | ..... | ..... | 18 | ..... | ..... | 28 | ..... | 1.50 |
| 9 | ..... | ..... | 19 | ..... | 2.41 | 29 | ..... | 1.45 |
| 10 | ..... | 1.15 | 20 | ..... | 2.20 | 30 | ..... | 1.40 |
| | | | | | | 31 | ..... | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | 1.34 | 1.50 | 2.05 | 1.70 | 7.70 | 3.45 | 7.10 | 4.50 | ..... | 7.20 | 6.60 | ..... |
| 2 | 1.32 | 1.47 | 2.00 | 1.68 | ..... | 3.60 | ..... | ..... | ..... | 8.20 | 6.60 | 2.20 |
| 3 | 1.30 | 1.45 | 2.10 | 1.62 | ..... | 3.90 | ..... | ..... | 8.55 | ..... | ..... | ..... |
| 4 | 1.28 | 1.43 | ..... | 1.62 | 5.80 | 5.50 | ..... | ..... | ..... | ..... | 4.90 | ..... |
| 5 | 1.26 | 1.40 | 2.20 | 1.62 | ..... | ..... | ..... | ..... | ..... | 7.20 | ..... | ..... |
| 6 | 1.24 | 1.35 | 2.10 | 1.63 | 5.10 | ..... | ..... | 7.10 | ..... | ..... | ..... | ..... |
| 7 | 1.22 | 1.30 | ..... | 1.63 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 8 | 1.20 | 1.30 | ..... | 1.65 | ..... | ..... | 6.20 | ..... | ..... | 6.80 | ..... | ..... |
| 9 | ..... | 1.30 | ..... | 1.92 | ..... | ..... | 5.20 | ..... | ..... | ..... | ..... | 1.80 |
| 10 | ..... | 1.25 | 2.90 | ..... | ..... | ..... | ..... | ..... | 7.90 | ..... | ..... | ..... |
| 11 | ..... | 1.25 | ..... | ..... | 4.28 | 5.90 | ..... | ..... | 8.90 | ..... | 3.40 | ..... |
| 12 | ..... | ..... | ..... | ..... | 4.00 | 5.70 | ..... | ..... | ..... | ..... | ..... | ..... |
| 13 | ..... | 2.15 | ..... | ..... | 4.25 | 5.50 | ..... | 7.20 | ..... | ..... | ..... | ..... |
| 14 | ..... | 2.10 | ..... | 3.20 | 4.00 | 5.30 | ..... | ..... | ..... | 6.40 | ..... | ..... |
| 15 | ..... | 2.05 | ..... | ..... | 3.90 | 5.10 | 5.10 | ..... | ..... | 8.70 | ..... | ..... |
| 16 | 2.10 | 1.95 | ..... | ..... | 3.85 | 5.10 | 5.10 | ..... | ..... | ..... | ..... | ..... |
| 17 | 2.15 | 1.90 | 2.50 | ..... | 3.80 | 5.30 | 5.00 | ..... | 9.90 | ..... | ..... | ..... |
| 18 | 2.10 | 2.00 | ..... | ..... | 3.80 | 5.30 | 4.60 | ..... | ..... | ..... | ..... | ..... |
| 19 | 2.12 | 2.35 | ..... | ..... | 3.75 | 5.30 | ..... | ..... | ..... | ..... | ..... | ..... |
| 20 | 2.05 | 2.25 | ..... | ..... | 3.65 | 5.30 | ..... | 8.20 | ..... | ..... | 2.85 | ..... |
| 21 | 2.00 | 2.15 | ..... | 4.55 | 3.55 | 5.15 | ..... | ..... | ..... | 6.80 | ..... | ..... |
| 22 | 1.95 | 2.20 | ..... | 4.05 | 3.45 | 5.00 | 6.40 | ..... | ..... | 9.20 | ..... | ..... |
| 23 | 1.90 | 2.15 | ..... | 3.55 | 3.50 | ..... | 6.40 | 8.80 | ..... | 7.60 | ..... | .80 |
| 24 | 1.85 | 2.35 | 2.10 | ..... | 3.50 | ..... | ..... | ..... | 9.20 | 6.20 | ..... | ..... |
| 25 | 1.80 | 2.50 | ..... | ..... | 3.60 | 6.00 | ..... | ..... | ..... | 6.30 | ..... | ..... |
| 26 | 1.75 | 2.50 | ..... | ..... | 3.45 | ..... | ..... | ..... | ..... | ..... | 2.50 | ..... |
| 27 | 1.70 | 2.35 | ..... | ..... | 3.45 | ..... | ..... | 7.35 | ..... | ..... | ..... | ..... |
| 28 | 1.65 | 2.25 | ..... | 3.70 | 3.40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 29 | 1.60 | 2.20 | ..... | ..... | ..... | ..... | 6.15 | ..... | ..... | 6.90 | ..... | ..... |
| 30 | 1.55 | 2.10 | ..... | 15.40 | ..... | ..... | 5.15 | ..... | ..... | 6.70 | ..... | ..... |
| 31 | 1.55 | ..... | 1.70 | ..... | ..... | ..... | ..... | ..... | ..... | 6.60 | ..... | ..... |

*Daily gage height, in feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | | | | | | | | | 8.40 | | | |
| 2 | | | 1.70 | | | 2.10 | | | | | | 1.16 |
| 3 | | | | | 2.30 | | | | | | 3.60 | |
| 4 | | 1.40 | | | | | | 4.20 | | | | 1.44 |
| 5 | | | | | | | | | | | | 1.51 |
| 6 | | | | | | | 4.00 | | | 4.10 | | |
| 7 | 1.50 | | | 1.50 | | | | | | | | 2.70 |
| 8 | | | | | | | | | 7.40 | | | |
| 9 | | | 1.50 | | | 2.90 | | | | | | |
| 10 | | | | | 1.70 | | | | | | 3.20 | |
| 11 | | | | | | | | 4.50 | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | 1.90 | | | 3.80 | | | 3.70 | | 1.35 |
| 14 | 1.45 | | | | | | | | | | | 1.30 |
| 15 | | | | | | | | | 6.60 | | | 1.25 |
| 16 | | | 1.30 | | | 2.90 | | | | | | 1.20 |
| 17 | | | | | 1.20 | | | | | | 1.60 | 1.15 |
| 18 | | | | | | | | 7.90 | | | | 1.10 |
| 19 | | | | | | | | | | | | 1.06 |
| 20 | | | | 2.90 | | | 3.50 | | | 3.50 | | 1.03 |
| 21 | 1.20 | | | | | | | | | | | 1.00 |
| 22 | | | | | | | | | 4.90 | | | |
| 23 | | | | | | 3.00 | | | | | | |
| 24 | | | | | 1.10 | | | | | | 1.40 | |
| 25 | | 2.30 | | | | | | 6.30 | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | 2.50 | | | 3.90 | | | 3.40 | | |
| 28 | | | | | | | | | | | | .80 |
| 29 | | | | | | | | | 4.90 | | | .78 |
| 30 | | | 1.10 | | | 3.40 | | | | | | .76 |
| 31 | | | | | | | | | | | | |
| 1912–13. | | | | | | | | | | | | |
| 1 | 0.74 | | 1.82 | 1.44 | 2.52 | 2.11 | 6.0 | 4.85 | 7.3 | 5.15 | | 4.45 |
| 2 | .73 | 1.20 | 1.74 | 1.38 | 2.58 | 2.11 | 5.8 | | 7.3 | 4.95 | 3.23 | 3.96 |
| 3 | .72 | 1.25 | 1.67 | 1.38 | 2.55 | 2.23 | 5.05 | 5.15 | 7.1 | 4.7 | | 3.65 |
| 4 | .71 | 1.30 | 1.67 | 1.43 | 2.47 | 2.50 | 4.65 | 5.85 | 7.5 | 4.5 | | 3.41 |
| 5 | .70 | 1.35 | 1.60 | 1.25 | 2.40 | 2.59 | 5.1 | 6.75 | 7.7 | 4.36 | | 2.78 |
| 6 | .73 | | 1.50 | 1.05 | 2.36 | 2.86 | 5.0 | 7.5 | 8.4 | 4.34 | | 2.66 |
| 7 | .76 | 4.40 | 1.38 | 1.20 | 2.40 | 2.93 | 4.65 | 7.8 | 8.0 | 4.37 | | |
| 8 | .79 | 3.80 | 1.44 | 1.28 | 2.47 | 3.26 | 4.40 | 7.7 | 7.6 | 4.26 | | |
| 9 | .82 | 3.40 | 1.32 | 1.30 | 2.47 | 3.41 | 4.5 | 7.7 | 7.0 | 4.06 | 2.61 | |
| 10 | .85 | 3.10 | 1.23 | 1.29 | 2.47 | 3.52 | 4.9 | 7.7 | 6.65 | 3.88 | 2.61 | |
| 11 | .88 | 2.90 | 1.23 | 1.26 | 2.49 | 3.58 | | 7.6 | 6.1 | 3.68 | 2.61 | |
| 12 | .90 | 2.80 | 1.24 | 1.33 | 2.48 | 3.36 | 5.5 | 7.0 | 6.1 | 3.50 | 2.55 | |
| 13 | .88 | 2.80 | 1.19 | 1.41 | 2.50 | 3.19 | 5.65 | 6.7 | 6.6 | 3.39 | 2.36 | 1.86 |
| 14 | .85 | 2.75 | 1.18 | 1.51 | 2.55 | 3.00 | 5.3 | 6.6 | 6.8 | 3.26 | | |
| 15 | .82 | 2.70 | 1.44 | 1.85 | 2.73 | 2.86 | 5.05 | 6.95 | 6.7 | 3.09 | 1.97 | 2.05 |
| 16 | .79 | 2.60 | 1.44 | 1.98 | 2.99 | 2.83 | 4.9 | 7.5 | 6.45 | 2.90 | 1.91 | |
| 17 | .76 | 2.7 | 1.57 | 1.77 | 3.04 | 2.91 | 4.8 | 8.0 | 6.15 | 2.73 | 1.92 | |
| 18 | .73 | 2.6 | 1.85 | 1.93 | 3.03 | 3.12 | 4.7 | 8.9 | 5.9 | 2.60 | 1.93 | |
| 19 | .70 | 2.5 | 1.85 | | 2.73 | 3.29 | 4.55 | 7.9 | 5.55 | 2.64 | 1.95 | |
| 20 | .70 | 2.5 | 1.72 | | 2.50 | 3.20 | | 7.5 | 5.3 | | 1.96 | 1.60 |
| 21 | .70 | 2.45 | 1.64 | | 2.50 | 3.09 | | 7.5 | 5.2 | | 1.98 | |
| 22 | .70 | 2.24 | | | 2.34 | 3.17 | | 8.1 | 5.25 | | 1.99 | 1.53 |
| 23 | .75 | 2.25 | | | 2.36 | 3.16 | | 8.6 | 5.0 | | 2.00 | 1.53 |
| 24 | 1.10 | 2.14 | | | | 3.16 | | 8.6 | 5.1 | | 2.11 | 1.50 |
| 25 | 1.00 | 2.11 | | 2.36 | | 3.10 | | 8.6 | 4.8 | | 2.50 | 1.34 |
| 26 | .90 | 1.98 | 1.38 | | | 3.09 | 6.9 | 8.7 | 5.0 | 5.05 | 2.67 | 1.32 |
| 27 | | 2.06 | | | | 3.24 | 7.3 | 8.7 | 5.7 | | 3.23 | 1.25 |
| 28 | .95 | 1.92 | 1.34 | | | 3.53 | | 8.5 | 5.6 | | 3.23 | 1.19 |
| 29 | 1.00 | 1.92 | | 2.38 | | 3.78 | | 7.4 | 5.7 | | 4.55 | 1.14 |
| 30 | 1.10 | 1.95 | | 2.38 | | 4.55 | | 7.4 | 5.45 | | 3.48 | 1.11 |
| 31 | | | | 2.44 | | 5.35 | | 7.4 | | | 3.60 | |

*Daily discharge, in second-feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1907. | | 1907. | | 1907. | |
| 1 | 470 | 11 | 456 | 21 | 260 |
| 2 | 482 | 12 | 460 | 22 | 242 |
| 3 | 463 | 13 | 452 | 23 | 225 |
| 4 | 534 | 14 | 435 | 24 | 207 |
| 5 | 550 | 15 | 382 | 25 | 207 |
| 6 | 518 | 16 | 358 | 26 | 202 |
| 7 | 490 | 17 | 330 | 27 | 199 |
| 8 | 463 | 18 | 312 | 28 | 191 |
| 9 | 456 | 19 | 295 | 29 | 183 |
| 10 | 446 | 20 | 277 | 30 | 180 |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1907–8. | | | | | | | | | | | | |
| 1 | 178 | 330 | 100 | 615 | 438 | 899 | 970 | 6,200 | 4,460 | 1,620 | 446 | 92 |
| 2 | 176 | 297 | 100 | 550 | 452 | 866 | 866 | 5,990 | 3,240 | 1,510 | 689 | 75 |
| 3 | 170 | 270 | 98 | 518 | 684 | 866 | 992 | 4,280 | 2,840 | 1,560 | 635 | 71 |
| 4 | 156 | 285 | 96 | 514 | 582 | 808 | 1,130 | 3,320 | 2,800 | 1,640 | 482 | 75 |
| 5 | 150 | 225 | 114 | 432 | 518 | 790 | 1,400 | 3,000 | 2,310 | 1,810 | 410 | 71 |
| 6 | 143 | 216 | 122 | 446 | 506 | 712 | 1,620 | 3,920 | 3,160 | 1,460 | 393 | 75 |
| 7 | 150 | 207 | 955 | 452 | 478 | 656 | 1,400 | 3,500 | 4,050 | 1,200 | 340 | 82 |
| 8 | 158 | 207 | 442 | 466 | 460 | 630 | 1,130 | 3,500 | 4,920 | 1,170 | 324 | 82 |
| 9 | 156 | 210 | 428 | 486 | 510 | 730 | 1,220 | 2,920 | 5,590 | 992 | 279 | 75 |
| 10 | 154 | 207 | 334 | 474 | 506 | 802 | 1,850 | 2,180 | 5,730 | 748 | 294 | 116 |
| 11 | 151 | 213 | 620 | 478 | 478 | 920 | 2,480 | 2,510 | 5,330 | 778 | 258 | 107 |
| 12 | 149 | 207 | 486 | 482 | 478 | 1,050 | 3,410 | 2,840 | 5,490 | 859 | 279 | 107 |
| 13 | 147 | 199 | 534 | 518 | 449 | 1,170 | 3,780 | 2,720 | 4,820 | 778 | 219 | 102 |
| 14 | 143 | 196 | 460 | 645 | 438 | 1,530 | 4,460 | 2,120 | 5,590 | 718 | 205 | 98 |
| 15 | 138 | 186 | 414 | 712 | 460 | 1,740 | 4,050 | 2,030 | 5,430 | 635 | 186 | 90 |
| 16 | 136 | 178 | 418 | 572 | 486 | 2,180 | 3,500 | 1,850 | 3,840 | 572 | 199 | 107 |
| 17 | 136 | 134 | 407 | 518 | 482 | 2,550 | 3,000 | 1,910 | 3,270 | 482 | 191 | 98 |
| 18 | 138 | 132 | 376 | 486 | 466 | 2,220 | 3,240 | 2,430 | 3,080 | 474 | 178 | 126 |
| 19 | 160 | 128 | 351 | 466 | 442 | 2,310 | 4,860 | 2,520 | 2,650 | 438 | 149 | 112 |
| 20 | 176 | 120 | 334 | 474 | 428 | 2,220 | 5,100 | 2,440 | 2,350 | 438 | 154 | 98 |
| 21 | 180 | 124 | 337 | 470 | 432 | 2,280 | 5,140 | 2,840 | 2,220 | 421 | 173 | 90 |
| 22 | 194 | 124 | 351 | 559 | 424 | 1,870 | 4,280 | 3,580 | 2,090 | 421 | 138 | 93 |
| 23 | 199 | 126 | 348 | 542 | 414 | 2,040 | 3,360 | 4,140 | 2,120 | 438 | 138 | 89 |
| 24 | 219 | 128 | 344 | 808 | 435 | 2,280 | 2,920 | 4,920 | 1,970 | 421 | 143 | 86 |
| 25 | 219 | 130 | 447 | 833 | 478 | 2,180 | 2,770 | 5,300 | 2,180 | 386 | 132 | 82 |
| 26 | 246 | 120 | 550 | 662 | 712 | 1,730 | 3,110 | 5,240 | 2,160 | 368 | 128 | 116 |
| 27 | 442 | 118 | 1,440 | 564 | 892 | 1,400 | 4,640 | 5,300 | 1,930 | 438 | 118 | 93 |
| 28 | 432 | 116 | 1,070 | 554 | 934 | 1,220 | 5,490 | 5,050 | 1,730 | 463 | 103 | 93 |
| 29 | 358 | 116 | 700 | 522 | 852 | 1,160 | 6,100 | 5,390 | 1,640 | 446 | 109 | 75 |
| 30 | 330 | 112 | 700 | 486 | ..... | 1,050 | 6,140 | 5,430 | 1,680 | 456 | 95 | 90 |
| 31 | 344 | ..... | 712 | 446 | ..... | 1,060 | ..... | 4,940 | ..... | 502 | 92 | ..... |

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Day. | Nov. | Dec. | Jan. | Feb. | Mar. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1908–9. | | | | | | 1908–9. | | | | | |
| 1 | ..... | 116 | 116 | 1,250 | 1,200 | 16 | ..... | 136 | 13,200 | 2,550 | 1,850 |
| 2 | ..... | 98 | 183 | 1,160 | 1,300 | 17 | ..... | 126 | 8,920 | 2,420 | 1,790 |
| 3 | ..... | 183 | 270 | 1,680 | 1,910 | 18 | ..... | 107 | 4,640 | 2,280 | 1,790 |
| 4 | ..... | 240 | 330 | 1,350 | 2,840 | 19 | ..... | 116 | 3,240 | 2,090 | 1,680 |
| 5 | ..... | 330 | 620 | 1,400 | 1,970 | 20 | ..... | 116 | 3,320 | 1,970 | 1,560 |
| 6 | ..... | 285 | 6,200 | 1,250 | 1,790 | 21 | ..... | 136 | 25,800 | 1,730 | 1,460 |
| 7 | ..... | 240 | 1,850 | 1,560 | 1,560 | 22 | ..... | 176 | 5,490 | 1,460 | 1,300 |
| 8 | ..... | 225 | 3,000 | 1,300 | 1,510 | 23 | 170 | 107 | 3,920 | 1,350 | 1,250 |
| 9 | ..... | 225 | 2,700 | 1,160 | 1,460 | 24 | 170 | 107 | 2,840 | 1,350 | 1,160 |
| 10 | ..... | 210 | 1,110 | 1,160 | 1,300 | 25 | 116 | 98 | 2,350 | 1,200 | 1,070 |
| 11 | ..... | 183 | 790 | 3,920 | 1,160 | 26 | 116 | 98 | 2,090 | 1,200 | 1,110 |
| 12 | ..... | 170 | 820 | 9,050 | 1,070 | 27 | 116 | 107 | 2,220 | 1,110 | 1,110 |
| 13 | ..... | 170 | 5,690 | 3,750 | 1,110 | 28 | 98 | 107 | 1,790 | 1,160 | 1,070 |
| 14 | ..... | 170 | 27,200 | 2,480 | 1,350 | 29 | 98 | 107 | 1,620 | ..... | 1,300 |
| 15 | ..... | 147 | 16,900 | 2,220 | 1,680 | 30 | 98 | 98 | 1,070 | ..... | 1,160 |
| | | | | | | 31 | ..... | 107 | 1,510 | ..... | 1,300 |

*Daily discharge, in second-feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913*—Continued.

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1910. | | | 1910. | | | 1910. | | |
| 1 | | | 11 | | | 21 | 126 | 270 |
| 2 | | | 12 | | | 22 | | 240 |
| 3 | | 82 | 13 | | | 23 | | 210 |
| 4 | | | 14 | | | 24 | | 183 |
| 5 | | | 15 | | | 25 | | 170 |
| 6 | | | 16 | | 2,190 | 26 | | 158 |
| 7 | | | 17 | | 866 | 27 | 126 | 147 |
| 8 | | | 18 | | | 28 | | 136 |
| 9 | | | 19 | | 404 | 29 | | 126 |
| 10 | | 75 | 20 | | 330 | 30 | | 116 |
| | | | | | | 31 | | |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | 105 | 136 | 285 | 183 | 7,760 | 920 | 6,410 | 1,970 | | 6,630 | 5,390 | |
| 2 | 102 | 130 | 270 | 178 | | 1,030 | | | | 8,930 | 5,390 | 330 |
| 3 | 98 | 126 | 300 | 163 | | 1,300 | | | 9,800 | | | |
| 4 | 95 | 122 | | 163 | 3,920 | 3,410 | | | | | 2,480 | |
| 5 | 92 | 116 | 330 | 163 | | | | | | 6,630 | | |
| 6 | 88 | 107 | 300 | 166 | 2,770 | | | 6,410 | | | | |
| 7 | 85 | 98 | | 166 | | | | | | | | |
| 8 | 82 | 98 | | 170 | | | 4,640 | | | 5,790 | | |
| 9 | | 98 | | 246 | | | 2,920 | | | | | 210 |
| 10 | | 90 | 595 | | | | | | 8,220 | | | |
| 11 | | 90 | | | 1,710 | 4,100 | | | 10,700 | | 885 | |
| 12 | | 315 | | | 1,400 | 3,750 | | | | | | |
| 13 | | 315 | | | 1,680 | 3,410 | | 6,630 | | | | |
| 14 | | 300 | | 760 | 1,400 | 3,080 | | | | 5,010 | | |
| 15 | | 285 | | | 1,300 | 2,770 | 2,770 | | | 10,200 | | |
| 16 | 300 | 255 | | | 1,250 | 2,770 | 2,770 | | | | | |
| 17 | 315 | 240 | 435 | | 1,200 | 3,080 | 2,620 | | 13,500 | | | |
| 18 | 300 | 270 | | | 1,200 | 3,080 | 2,090 | | | | | |
| 19 | 306 | 382 | | | 1,160 | 3,080 | | | | | 572 | |
| 20 | 285 | 348 | | | 1,070 | 3,080 | | 8,930 | | | | |
| 21 | 270 | 315 | | 2,030 | 992 | 2,840 | | | | 5,790 | | |
| 22 | 255 | 330 | | 1,460 | 920 | 2,620 | 5,010 | | | 11,500 | | |
| 23 | 240 | 315 | | 992 | 955 | | 5,010 | 10,400 | | 7,530 | | 38 |
| 24 | 225 | 382 | 300 | | 955 | | | | 11,500 | 4,640 | | |
| 25 | 210 | 435 | | | 1,030 | 4,280 | | | | 4,820 | | |
| 26 | 196 | 435 | | | 920 | | | | | | 435 | |
| 27 | 183 | 382 | | | 920 | | | 6,960 | | | | |
| 28 | 170 | 348 | | 1,110 | 885 | | | | | | | |
| 29 | 158 | 330 | | | | | 4,550 | | | 5,990 | | |
| 30 | 147 | 300 | | 32,400 | | | 2,840 | | | 5,590 | | |
| 31 | 147 | | 183 | | | | | | | 5,390 | | |

*Daily discharge, in second-feet, of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 9,420 | ..... | ..... | ..... |
| 2 | ..... | ..... | 183 | ..... | ..... | 300 | ..... | ..... | ..... | ..... | ..... | 76 |
| 3 | ..... | ..... | ..... | ..... | 365 | ..... | ..... | ..... | ..... | ..... | 1,030 | ..... |
| 4 | ..... | 116 | ..... | ..... | ..... | ..... | ..... | 1,620 | ..... | ..... | ..... | 124 |
| 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 138 |
| 6 | ..... | ..... | ..... | ..... | ..... | ..... | 1,400 | ..... | ..... | 1,510 | ..... | ..... |
| 7 | 136 | ..... | ..... | 136 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 510 |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7,070 | ..... | ..... | ..... |
| 9 | ..... | ..... | 136 | ..... | ..... | 595 | ..... | ..... | ..... | ..... | ..... | ..... |
| 10 | ..... | ..... | ..... | ..... | 183 | ..... | ..... | ..... | ..... | ..... | 760 | ..... |
| 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,970 | ..... | ..... | ..... | ..... |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 13 | ..... | ..... | ..... | 240 | ..... | ..... | 1,200 | ..... | ..... | 1,110 | ..... | 107 |
| 14 | 126 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 98 |
| 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5,390 | ..... | ..... | 90 |
| 16 | ..... | ..... | 98 | ..... | ..... | 595 | ..... | ..... | ..... | ..... | ..... | 82 |
| 17 | ..... | ..... | ..... | ..... | 82 | ..... | ..... | ..... | ..... | ..... | 158 | 75 |
| 18 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8,220 | ..... | ..... | ..... | 68 |
| 19 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 63 |
| 20 | ..... | ..... | ..... | 595 | ..... | ..... | 955 | ..... | ..... | 955 | ..... | 60 |
| 21 | 82 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 56 |
| 22 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,480 | ..... | ..... | ..... |
| 23 | ..... | ..... | ..... | ..... | ..... | 645 | ..... | ..... | ..... | ..... | ..... | ..... |
| 24 | ..... | ..... | ..... | ..... | 68 | ..... | ..... | ..... | ..... | ..... | 116 | ..... |
| 25 | ..... | 365 | ..... | ..... | ..... | ..... | ..... | 4,820 | ..... | ..... | ..... | ..... |
| 26 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 27 | ..... | ..... | ..... | 435 | ..... | ..... | 1,300 | ..... | ..... | 885 | ..... | ..... |
| 28 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 38 |
| 29 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,480 | ..... | ..... | 37 |
| 30 | ..... | ..... | 68 | ..... | ..... | 885 | ..... | ..... | ..... | ..... | ..... | 36 |
| 31 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 34 | 77 | 201 | 132 | 371 | 268 | 2,940 | 1,670 | 4,960 | 1,970 | 1,250 | 1,310 |
| 2 | 34 | 82 | 185 | 123 | 389 | 268 | 2,680 | 1,820 | 4,960 | 1,770 | 597 | 956 |
| 3 | 33 | 90 | 172 | 123 | 380 | 298 | 1,870 | 1,970 | 4,610 | 1,530 | ..... | 785 |
| 4 | 33 | 98 | 172 | 130 | 358 | 365 | 1,480 | 2,740 | 5,330 | 1,350 | ..... | 674 |
| 5 | 32 | 107 | 159 | 104 | 340 | 392 | 1,920 | 4,030 | 5,710 | 1,240 | ..... | 449 |
| 6 | 34 | 1,300 | 141 | 78 | 330 | 473 | 1,820 | 5,330 | 7,190 | 1,220 | ..... | 413 |
| 7 | 36 | 1,850 | 123 | 96 | 340 | 494 | 1,480 | 5,910 | 6,320 | 1,250 | ..... | ..... |
| 8 | 37 | 1,200 | 132 | 108 | 358 | 609 | 1,270 | 5,710 | 5,520 | 1,160 | ..... | ..... |
| 9 | 40 | 885 | 114 | 111 | 358 | 674 | 1,350 | 5,710 | 4,440 | 1,020 | 398 | ..... |
| 10 | 42 | 700 | 100 | 110 | 358 | 724 | 1,720 | 5,710 | 3,880 | 908 | 398 | ..... |
| 11 | 44 | 595 | 100 | 105 | 362 | 751 | 2,020 | 5,520 | 3,080 | 800 | 298 | ..... |
| 12 | 46 | 550 | 102 | 116 | 360 | 652 | 2,330 | 4,440 | 3,080 | 715 | 380 | ..... |
| 13 | 44 | 550 | 95 | 128 | 365 | 582 | 2,500 | 3,950 | 3,800 | 666 | 330 | 209 |
| 14 | 42 | 530 | 94 | 143 | 380 | 515 | 2,120 | 3,800 | 4,110 | 609 | 282 | 190 |
| 15 | 40 | 510 | 132 | 207 | 434 | 473 | 1,870 | 4,360 | 3,950 | 546 | 233 | 252 |
| 16 | 37 | 470 | 132 | 235 | 512 | 464 | 1,720 | 5,330 | 3,580 | 485 | 219 | ..... |
| 17 | 36 | 425 | 154 | 191 | 529 | 488 | 1,620 | 6,320 | 3,150 | 434 | 222 | ..... |
| 18 | 34 | 395 | 207 | 224 | 526 | 557 | 1,530 | 8,360 | 2,810 | 395 | 224 | ..... |
| 19 | 32 | 365 | 207 | ..... | 434 | 621 | 1,400 | 6,110 | 2,380 | 407 | 228 | ..... |
| 20 | 32 | 365 | 181 | ..... | 365 | 585 | ..... | 5,330 | 2,120 | ..... | 231 | 159 |
| 21 | 32 | 352 | 166 | ..... | 365 | 546 | ..... | 5,330 | 2,020 | ..... | 235 | 152 |
| 22 | 32 | 300 | 157 | ..... | 325 | 574 | ..... | 6,530 | 2,070 | ..... | 238 | 146 |
| 23 | 35 | 302 | 148 | ..... | 330 | 571 | ..... | 7,650 | 1,820 | ..... | 240 | 146 |
| 24 | 68 | 275 | 139 | ..... | ..... | 571 | ..... | 7,650 | 1,920 | ..... | 268 | 141 |
| 25 | 56 | 268 | 131 | 330 | ..... | 550 | ..... | 7,650 | 1,620 | ..... | 365 | 117 |
| 26 | 46 | 235 | 123 | 332 | ..... | 546 | 4,270 | 7,880 | 1,820 | 1,870 | 416 | 114 |
| 27 | 48 | 255 | 120 | 332 | ..... | 601 | 4,960 | 7,880 | 2,560 | ..... | 597 | 104 |
| 28 | 51 | 222 | 117 | 332 | ..... | 728 | ..... | 7,420 | 2,440 | ..... | 597 | 95 |
| 29 | 56 | 222 | 120 | 335 | ..... | 850 | ..... | 5,140 | 2,560 | ..... | 1,400 | 89 |
| 30 | 68 | 228 | 124 | 335 | ..... | 1,400 | ..... | 5,140 | 2,280 | ..... | 706 | 85 |
| 31 | 72 | ..... | 128 | 350 | ..... | 2,170 | ..... | 5,140 | ..... | ..... | 760 | ..... |

NOTE.—Discharge for days for which gage heights are missing in complete months, interpolated or estimated by comparison with that of the combined flow of the Tuolumne River and three canals near La Grange. Estimated mean for periods in 1913 are as follows: Jan. 19–24, 420 second-feet; Feb. 24–28, 350 second-feet; Apr. 20–25, 2,210 second-feet; Apr. 28–30, 2,960 second-feet; July 20–25, 690 second-feet; July 27–31, 1,250 second-feet; Aug. 3–8, 457 second-feet; Sept. 7–12, 295 second-feet; Sept. 16–19, 190 second-feet.

*Monthly discharge of Tuolumne River near Groveland, Cal., for the years ending Sept. 30, 1907–1909 and 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1907. | | | | | |
| September | 550 | 180 | 358 | 21,300 | B. |
| 1907–8. | | | | | |
| October | 442 | 136 | 201 | 12,400 | B. |
| November | 330 | 112 | 179 | 10,700 | B. |
| December | 1,440 | 96 | 458 | 28,200 | B. |
| January | 833 | 432 | 540 | 33,200 | B. |
| February | 934 | 414 | 528 | 30,400 | B. |
| March | 2,550 | 630 | 1,420 | 87,300 | B. |
| April | 6,140 | 866 | 3,150 | 187,000 | B. |
| May | 6,200 | 1,850 | 3,690 | 227,000 | B. |
| June | 5,730 | 1,640 | 3,360 | 200,000 | B. |
| July | 1,810 | 368 | 795 | 48,900 | B. |
| August | 689 | 92 | 248 | 15,200 | B. |
| September | 126 | 71 | 92.2 | 5,490 | B. |
| The year | 6,200 | 71 | 1,220 | 886,000 | |
| 1908–9. | | | | | |
| November 23–30 | 170 | 98 | 123 | 1,950 | B. |
| December | 330 | 98 | 155 | 9,530 | B. |
| January | 27,200 | 116 | 4,900 | 301,000 | B. |
| February | 9,050 | 1,110 | 2,020 | 112,000 | B. |
| March | 2,840 | 1,070 | 1,460 | 89,800 | B. |
| The period | | | | 514,000 | |
| 1912–13. | | | | | |
| October | | 32 | 42.1 | 2,590 | B. |
| November | 1,850 | 77 | 460 | 27,400 | B. |
| December | 207 | 94 | 141 | 8,670 | B. |
| January | | 78 | 236 | 14,500 | B. |
| February | 529 | 325 | 379 | 21,000 | B. |
| March | 2,170 | 268 | 625 | 38,400 | A. |
| April | 4,960 | 1,270 | 2,230 | 133,000 | B. |
| May | 8,360 | 1,670 | 5,400 | 332,000 | A. |
| June | 7,190 | 1,620 | 3,540 | 211,000 | A. |
| July | 1,970 | 395 | 991 | 60,900 | B. |
| August | 1,400 | 219 | 450 | 27,700 | B. |
| September | 1,310 | 85 | 304 | 18,100 | B. |
| The year | 8,360 | 32 | 1,240 | 895,000 | |

NOTE.—See footnotes to daily discharge table.

### TUOLUMNE RIVER NEAR LA GRANGE, CAL.

LOCATION.—In the NE. ¼ SE. ¼ sec. 17, T. 3 S., R. 14 E., at La Grange dam, about 1¼ miles northeast of La Grange.

RECORDS AVAILABLE.—August 30, 1895, to September 30, 1913.

DRAINAGE AREA.—1,500 square miles.

GAGE.—Painted on rock ledge on right bank 80 feet above dam. Zero of gage is at average elevation of crest of dam.

DISCHARGE.—Computed by means of weir formula from gage heights showing depth of water on crest of curved masonry diversion dam. Coefficient determined from current-meter measurements made at highway bridge at La Grange, corrected to give discharge at dam. To obtain the total flow of Tuolumne River above La Grange dam, it is necessary to combine the flow over the dam with the discharge of Modesto, Turlock, and Yosemite Power Co.'s canals.

DIVERSIONS.—Modesto and Turlock canals divert at dam. Yosemite Power Co.'s canal heads 13 miles above the dam and the water is returned to the river below the dam and about half a mile above the bridge at La Grange. There is also a diversion from South Fork Tuolumne River at Harden ranch; water not returned to the river.

ACCURACY.—Results good except at extremely low water. The combined record of river and canals is affected by seepage through dam and from canals, by the use of flashboards on the dam for a short period during the low-water flow, by the small amount of water occasionally spilled from canals at the waste gates above gaging stations, and by the water discharged through the ports and sand-gates in the dam during parts of the year.

*Daily gage height, in feet, of Tuolumne River near La Grange, Cal., for the year ending Sept. 30, 1913.*

[J. W. Johnson, observer.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0.4 | | | | 1.5 | 0.9 | | 1.9 |
| 2 | .1 | .32 | | | | 1.75 | .65 | | 1.45 |
| 3 | .1 | .2 | | | | .95 | | | 1.05 |
| 4 | .1 | .08 | | | | .5 | | | .35 |
| 5 | .1 | | | | | .55 | | | |
| 6 | .1 | .3 | | | | .9 | | | |
| 7 | .95 | .3 | | | | .45 | | | |
| 8 | .95 | .25 | | | | .2 | | | |
| 9 | .78 | .22 | | | | | | | |
| 10 | .75 | | | | | .5 | | | |
| 11 | 1.05 | | | | | .9 | | | |
| 12 | .85 | | | | | 1.1 | | | |
| 13 | .8 | | | | | 1.2 | | | |
| 14 | .8 | | | | | 1.2 | | | |
| 15 | .68 | | | | | .85 | | | |
| 16 | .6 | | 0.75 | | | .65 | | | |
| 17 | .6 | .05 | .65 | | | .45 | | | |
| 18 | .55 | .05 | .35 | | | .4 | | | |
| 19 | .58 | | .75 | | | .3 | | | |
| 20 | .68 | | .18 | | | .3 | | | |
| 21 | .55 | | | | | .5 | | | |
| 22 | .55 | | | | | .8 | | | |
| 23 | .5 | | | | | 1.15 | | | |
| 24 | .5 | | | | | 1.55 | | | |
| 25 | .5 | | | | | 1.85 | | | |
| 26 | .48 | | | | | 2.6 | | | |
| 27 | .4 | | | | | 2.9 | | | |
| 28 | .4 | | | | | 2.5 | | | |
| 29 | .4 | | | | | 1.85 | | | |
| 30 | .4 | | | | | 1.35 | | | |
| 31 | | | | | 1.05 | | | 1.75 | |

NOTE.—Oct. 1–21, 1912, and Sept. 15–30, 1913, gates in dam open; no water passing over dam. May 3 to July 3, 1913, flashboards on dam. No record Dec. 10, 1912, Jan. 15, Feb. 12, Mar. 7 and 30, Apr. 9, July 27 and 30, and Aug. 30, 1913.

*Daily discharge, in second-feet, of Tuolumne River near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 81 | 229 | 0 | 0 | 0 | 1,660 | 772 | ..... | 0 | 2,370 |
| 2 | 29 | 165 | 0 | 0 | 0 | 2,090 | 476 | ..... | 0 | 1,580 |
| 3 | 29 | 81 | 0 | 0 | 0 | 838 | ..... | ..... | 0 | 972 |
| 4 | 29 | 23 | 0 | 0 | 0 | 320 | ..... | 0 | 0 | 189 |
| 5 | 29 | 0 | 0 | 0 | 0 | 370 | ..... | 0 | 0 | 0 |
| 6 | 29 | 149 | 0 | 0 | 0 | 772 | ..... | 0 | 0 | 0 |
| 7 | 838 | 149 | 0 | 0 | 7 | 274 | ..... | 0 | 0 | 0 |
| 8 | 838 | 115 | 0 | 0 | 0 | 81 | ..... | 0 | 0 | 0 |
| 9 | 624 | 95 | 0 | 0 | 0 | 114 | ..... | 0 | 0 | 0 |
| 10 | 589 | 40 | 0 | 0 | 0 | 320 | ..... | 0 | 0 | 0 |
| 11 | 972 | 0 | 0 | 0 | 0 | 772 | ..... | 0 | 0 | 0 |
| 12 | 710 | 0 | 0 | 74 | 0 | 1,040 | ..... | 0 | 0 | 0 |
| 13 | 648 | 0 | 0 | 0 | 0 | 1,180 | ..... | 0 | 0 | 0 |
| 14 | 648 | 0 | 0 | 0 | 0 | 1,180 | ..... | 0 | 0 | 0 |
| 15 | 508 | 0 | 160 | 0 | 0 | 710 | ..... | 0 | 0 | ..... |
| 16 | 421 | 0 | 589 | 0 | 0 | 476 | ..... | 0 | 0 | ..... |
| 17 | 421 | 14 | 476 | 0 | 0 | 274 | ..... | 0 | 0 | ..... |
| 18 | 370 | 14 | 189 | 0 | 0 | 229 | ..... | 0 | 0 | ..... |
| 19 | 401 | 0 | 589 | 0 | 0 | 149 | ..... | 0 | 0 | ..... |
| 20 | 508 | 0 | 71 | 0 | 0 | 149 | ..... | 0 | 0 | ..... |
| 21 | 370 | 0 | 0 | 0 | 0 | 320 | ..... | 0 | 0 | ..... |
| 22 | 370 | 0 | 0 | 0 | 0 | 648 | ..... | 0 | 0 | ..... |
| 23 | 320 | 0 | 0 | 0 | 0 | 1,110 | ..... | 0 | 0 | ..... |
| 24 | 320 | 0 | 0 | 0 | 0 | 1,740 | ..... | 0 | 0 | ..... |
| 25 | 320 | 0 | 0 | 0 | 0 | 2,280 | ..... | 0 | 0 | ..... |
| 26 | 302 | 0 | 0 | 0 | 0 | 3,800 | ..... | 0 | 0 | ..... |
| 27 | 229 | 0 | 0 | 0 | 0 | 4,470 | ..... | 452 | 0 | ..... |
| 28 | 229 | 0 | 0 | 0 | 0 | 3,580 | ..... | 0 | 0 | ..... |
| 29 | 229 | 0 | 0 | ..... | 0 | 2,280 | ..... | 0 | 0 | ..... |
| 30 | 229 | 0 | 0 | ..... | 160 | 1,420 | ..... | 160 | 14 | ..... |
| 31 | ..... | 0 | 0 | ..... | 972 | ..... | ..... | 0 | 2,090 | ..... |

NOTE.—Discharge over La Grange dam determined from a rating curve developed from current-meter measurements and from the weir formula $Q=905h^{\frac{3}{2}}$. Discharge through gates in the dam Oct. 1–21, 1912, and Sept. 15–30, 1913, not known. No water flowing over the dam Oct. 22–31, Dec. 11–16, Dec. 19, 1912, to Jan. 14, 1913, Jan. 21 to Feb. 11, Feb. 13 to Mar. 6, Mar. 8–29, July 4–26, July 28, 29, and 31, Aug. 1–29, and Sept. 5–14. Discharge estimated Dec. 10, 1912, Jan. 15, Feb. 12, Mar. 7 and 30, Apr. 9, July 27 and 30, and Aug. 30, 1913.

*Monthly discharge of Tuolumne River near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October 22–31 | 0 | 0 | 0 | 0 | |
| November | 972 | 29 | 388 | 23,100 | B. |
| December | 229 | 0 | 34.6 | 2,130 | B. |
| January | 589 | 0 | 66.9 | 4,110 | B. |
| February | ..... | 0 | 2.6 | 144 | |
| March | 972 | 0 | 36.7 | 2,260 | |
| April | 4,470 | 81 | 1,150 | 68,400 | B. |
| August | 2,090 | 0 | 67.9 | 4,180 | |
| September 1–14 | 2,370 | 0 | 36.5 | 10,100 | B. |

NOTE.—Flashboards were on dam May 3 to July 3, 1913, and rating for gage at dam did not apply. Discharge for this period estimated by comparison with Tuolumne River near Groveland, as follows: May 3 to 15, 5,480 second-feet; May 16 to 31, 7,590 second-feet; June 1 to 15, 5,490 second-feet; June 16 to 31, 2,620 second-feet, and July 1 to 3, 2,620 second-feet.

*Combined daily discharge, in second-feet, of Tuolumne River and three canals near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 137 | 288 | 171 | 443 | 398 | 3,290 | 2,580 | ..... | 1,030 | 2,590 |
| 2 | ..... | 85 | 327 | 179 | 462 | 392 | 3,750 | 2,240 | ..... | 816 | 1,990 |
| 3 | ..... | 85 | 278 | 188 | 500 | 389 | 2,560 | ..... | ..... | 733 | 1,550 |
| 4 | ..... | 85 | 257 | 179 | 538 | 398 | 2,040 | ..... | 1,570 | 646 | 768 |
| 5 | ..... | 85 | 182 | 179 | 538 | 570 | 2,050 | ..... | 1,380 | 589 | 541 |
| 6 | ..... | 88 | 208 | 165 | 521 | 500 | 2,550 | ..... | 1,340 | 531 | 465 |
| 7 | ..... | 894 | 208 | 120 | 503 | 911 | 2,000 | ..... | 1,340 | 446 | 408 |
| 8 | ..... | 894 | 174 | 98 | 485 | 844 | 1,720 | ..... | 1,360 | 398 | 351 |
| 9 | ..... | 680 | 154 | 143 | 494 | 804 | 1,720 | ..... | 1,280 | 378 | 322 |
| 10 | ..... | 648 | 190 | 162 | 490 | 935 | 2,000 | ..... | 1,110 | 300 | 313 |
| 11 | ..... | 1,030 | 171 | 168 | 340 | 1,010 | 2,530 | ..... | 1,010 | 398 | 275 |
| 12 | ..... | 769 | 159 | 159 | 574 | 992 | 2,850 | ..... | 897 | 522 | 246 |
| 13 | ..... | 707 | 149 | 159 | 551 | 840 | 2,990 | ..... | 795 | 393 | 222 |
| 14 | ..... | 707 | 146 | 173 | 532 | 785 | 2,960 | ..... | 749 | 326 | 204 |
| 15 | ..... | 567 | 149 | 391 | 585 | 696 | 2,510 | ..... | 687 | 278 | ..... |
| 16 | ..... | 480 | 159 | 877 | 592 | 639 | 2,230 | ..... | 614 | 252 | ..... |
| 17 | ..... | 480 | 190 | 818 | 647 | 633 | 1,970 | ..... | 536 | 229 | ..... |
| 18 | ..... | 429 | 245 | 569 | 734 | 756 | 1,930 | ..... | 486 | 212 | ..... |
| 19 | ..... | 460 | 253 | 1,030 | 732 | 856 | 1,850 | ..... | 442 | 205 | ..... |
| 20 | ..... | 564 | 253 | 552 | 607 | 894 | 1,810 | ..... | 475 | 190 | ..... |
| 21 | ..... | 429 | 253 | 443 | 512 | 819 | 2,040 | ..... | 456 | 152 | ..... |
| 22 | 56 | 426 | 243 | 405 | 509 | 839 | 2,370 | ..... | 526 | 166 | ..... |
| 23 | 59 | 379 | 211 | 424 | 458 | 1,060 | 2,900 | ..... | 589 | 161 | ..... |
| 24 | 59 | 379 | 197 | 424 | 424 | 1,010 | 3,590 | ..... | 1,030 | 182 | ..... |
| 25 | 59 | 376 | 197 | 386 | 469 | 1,020 | 4,130 | ..... | 976 | 213 | ..... |
| 26 | 59 | 358 | 193 | 386 | 465 | 907 | 5,650 | ..... | 1,200 | 417 | ..... |
| 27 | 59 | 285 | 188 | 424 | 445 | 860 | 6,320 | ..... | 1,830 | 462 | ..... |
| 28 | 59 | 288 | 179 | 443 | 436 | 957 | 5,430 | ..... | 1,500 | 556 | ..... |
| 29 | 59 | 288 | 179 | 440 | ..... | 1,180 | 4,150 | ..... | 1,210 | 888 | ..... |
| 30 | 59 | 288 | 179 | 421 | ..... | 1,470 | 3,270 | ..... | 1,730 | 929 | ..... |
| 31 | 56 | ..... | 171 | 424 | ..... | 2,520 | ..... | ..... | 1,300 | 3,120 | ..... |

*Monthly discharge of Tuolumne River and three canals near La Grange, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 1,500 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October 22–31 | 59 | 56 | 58.4 | 0.039 | 0.01 | 1,160 | B. |
| November | 1,030 | 85 | 446 | .297 | .33 | 26,500 | B. |
| December | 327 | 146 | 204 | .136 | .16 | 12,500 | B. |
| January | 1,030 | 98 | 358 | .239 | .28 | 22,000 | B. |
| February | 734 | 340 | 521 | .347 | .36 | 28,900 | A. |
| March | 2,520 | 389 | 867 | .578 | .67 | 53,300 | A. |
| April | 6,320 | 1,720 | 2,910 | 1.94 | 2.16 | 173,000 | B. |
| May | ..... | ..... | 6,370 | 4.25 | 4.90 | 392,000 | |
| June | ..... | ..... | 4,060 | 2.71 | 3.02 | 242,000 | |
| July | ..... | 442 | 1,170 | .780 | .90 | 71,900 | B. |
| August | 3,120 | 152 | 520 | .347 | .40 | 32,000 | B. |
| September 1–14 | 2,590 | 204 | 732 | .488 | .25 | 20,300 | B. |
| The period | ..... | ..... | ..... | ..... | 13.44 | 1,080,000 | |

NOTE.—See footnotes to daily discharge table.

### CHERRY CREEK NEAR SEQUOIA, CAL.

LOCATION.—In the SW. ¼ sec. 28, T. 2 N., R. 19 E., in Stanislaus National Forest, at trail suspension bridge near abandoned sawmill camp, 3 miles by trail from Lake Eleanor, and about 13 miles north of Sequoia.

RECORDS AVAILABLE.—April 1, 1910, to September 30, 1913.

DRAINAGE AREA.—114 square miles [1] (above dam site about 2 miles below station in sec. 5, T. 1 N., R. 19 E.).

GAGE.—Lietz water-stage recorder on left bank at bridge, with vertical staff in two sections at same site. No record of gages used previous to 1913.

CHANNEL.—Fine gravel and sand; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation somewhat affected by ice.

COOPERATION.—Complete record furnished by city of San Francisco, through M. M. O'Shaughnessy, city engineer.

*Daily gage height, in feet, of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1912–13.*

| | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | | |
| 1 | 5.36 | 6.14 | 6.01 | 7.00 | 7.86 | 11.34 | 7.65 | 5.65 | 4.86 |
| 2 | 5.40 | 6.14 | 5.97 | 7.60 | 7.44 | 11.76 | 7.39 | 5.60 | 4.85 |
| 3 | 5.44 | 6.15 | 5.94 | 7.70 | 7.32 | 11.00 | 7.30 | 5.55 | 6.35 |
| 4 | 5.50 | 6.15 | 6.20 | 7.40 | 7.55 | 11.20 | 7.24 | 5.50 | 5.60 |
| 5 | 5.55 | 6.16 | 6.75 | 7.40 | 7.74 | 11.50 | 7.20 | 5.45 | 5.40 |
| 6 | 5.61 | 6.16 | 7.13 | 7.60 | 7.87 | 11.20 | 7.17 | 5.40 | 5.20 |
| 7 | 5.69 | 6.15 | 6.75 | 7.90 | 8.41 | 10.90 | 7.14 | 5.35 | 7.00 |
| 8 | 5.77 | 6.13 | 6.35 | 7.90 | 8.70 | 10.78 | 7.02 | 5.30 | 6.40 |
| 9 | 5.85 | 6.11 | 6.30 | 7.85 | 9.00 | 10.50 | 6.90 | 5.25 | 5.56 |
| 10 | 5.93 | 6.10 | 6.25 | 7.60 | 9.30 | 10.20 | 6.80 | 5.20 | 5.54 |
| 11 | 5.90 | 6.07 | 6.20 | 7.50 | 9.58 | 10.20 | 6.72 | 5.16 | 5.50 |
| 12 | 5.87 | 6.04 | 6.15 | 7.20 | 9.89 | 10.25 | 6.66 | 5.12 | 5.42 |
| 13 | 5.88 | 6.03 | 6.15 | 7.05 | 10.20 | 10.30 | 6.61 | 5.08 | 5.36 |
| 14 | 5.90 | 6.02 | 6.15 | 7.25 | 10.40 | 10.00 | 6.56 | 5.07 | 5.30 |
| 15 | 5.92 | 6.01 | 6.15 | 7.40 | 11.35 | 9.65 | 6.48 | 5.06 | 5.25 |
| 16 | 5.93 | 6.00 | 6.17 | 7.25 | 11.69 | 9.18 | 6.42 | 5.05 | 5.23 |
| 17 | 5.94 | 6.05 | 6.19 | 7.02 | 11.42 | 9.05 | 6.42 | 5.05 | 5.20 |
| 18 | 5.95 | 6.10 | 6.25 | 6.86 | 11.14 | 9.21 | 6.50 | 5.04 | 5.15 |
| 19 | 5.95 | 6.23 | 6.35 | 6.70 | 10.68 | 9.40 | 6.39 | 5.03 | 5.10 |
| 20 | 5.95 | 6.10 | 6.41 | 6.54 | 9.90 | 9.47 | 6.32 | 5.01 | 5.06 |
| 21 | 5.95 | 6.00 | 6.35 | 6.70 | 9.04 | 9.16 | 6.22 | 4.99 | 5.03 |
| 22 | 5.95 | 5.98 | 6.25 | 6.80 | 8.39 | 8.50 | 6.16 | 4.97 | 5.00 |
| 23 | 5.94 | 5.95 | 6.30 | 6.90 | 8.19 | 7.85 | 6.10 | 4.96 | 4.98 |
| 24 | 5.93 | 5.80 | 6.67 | 7.18 | 8.46 | 7.55 | 6.05 | 4.95 | 4.97 |
| 25 | 5.91 | 5.60 | 6.66 | 7.00 | 9.60 | 7.45 | 6.00 | 4.94 | 4.96 |
| 26 | 5.97 | 5.68 | 6.65 | 7.25 | 9.75 | 7.74 | 5.95 | 4.93 | 4.96 |
| 27 | 6.04 | 5.74 | 6.64 | 7.10 | 9.90 | 8.00 | 5.90 | 4.92 | 4.95 |
| 28 | 6.06 | 5.90 | 6.64 | 7.30 | 10.10 | 8.05 | 5.85 | 4.91 | 4.95 |
| 29 | 6.09 | 6.05 | 6.70 | 7.40 | 10.30 | 7.99 | 5.80 | 4.90 | 4.94 |
| 30 | 6.12 | ..... | 6.80 | 7.60 | 10.50 | 7.87 | 5.75 | 4.88 | 4.93 |
| 31 | 6.14 | ..... | 6.90 | ..... | 10.70 | ..... | 5.70 | 4.87 | ..... |

[1] Freeman, John R., The Hetch Hetchy water supply for San Francisco, p. 24, 1912.

*Daily gage height, in feet, of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1912–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 4.92 | 5.34 | 5.74 | 5.40 | 6.17 | 5.70 | 8.57 | 7.35 | 9.55 | 7.32 | 6.30 | 6.47 |
| 2 | 4.91 | 5.31 | 5.60 | 5.45 | 6.15 | 5.68 | 7.97 | 7.32 | 9.71 | 6.96 | 6.09 | 6.07 |
| 3 | 4.89 | 5.28 | 5.48 | 5.50 | 6.13 | 6.00 | 7.43 | 7.93 | 9.46 | 6.79 | 6.04 | 5.93 |
| 4 | 4.87 | 5.40 | 5.36 | 5.45 | 6.08 | 6.30 | 7.40 | 8.80 | 10.28 | 6.62 | 5.94 | 5.81 |
| 5 | 4.94 | 5.50 | 5.30 | 5.40 | 6.04 | 6.45 | 7.94 | 9.54 | 10.81 | 6.52 | 5.85 | 5.73 |
| 6 | 4.94 | 8.50 | 5.32 | 5.35 | 6.00 | 6.50 | 7.29 | 9.95 | 10.68 | 5.45 | 5.76 | 5.57 |
| 7 | 4.95 | 8.50 | 5.34 | 5.30 | 6.02 | 6.60 | 7.07 | 9.99 | 9.82 | 6.40 | 5.68 | 5.48 |
| 8 | 4.95 | 7.00 | 5.36 | 5.25 | 6.04 | 6.75 | 7.02 | 9.92 | 9.26 | 6.35 | 5.62 | 5.35 |
| 9 | 4.94 | 7.00 | 5.36 | 5.20 | 6.06 | 6.95 | 7.37 | 10.04 | 9.06 | 6.25 | 5.54 | 5.31 |
| 10 | 4.93 | 7.75 | 5.33 | 5.15 | 6.08 | 6.98 | 7.71 | 9.76 | 8.45 | 6.17 | 5.60 | 5.28 |
| 11 | 4.92 | 7.00 | 5.30 | 5.10 | 6.10 | 6.93 | 8.09 | 9.43 | 7.96 | 6.06 | 6.26 | 5.19 |
| 12 | 4.91 | 6.70 | 5.28 | 5.10 | 6.13 | 6.55 | 8.25 | 8.74 | 8.07 | 5.96 | 5.68 | 5.12 |
| 13 | 4.90 | 6.50 | 5.26 | 5.10 | 6.16 | 6.42 | 8.04 | 8.62 | 8.36 | 5.88 | 5.50 | 5.09 |
| 14 | 4.89 | 6.35 | 5.32 | 5.15 | 6.20 | 6.05 | 7.67 | 8.73 | 8.52 | 5.80 | 5.42 | 5.08 |
| 15 | 4.88 | 6.25 | 5.70 | 5.30 | 6.25 | 6.09 | 7.31 | 9.22 | 8.50 | 5.72 | 5.35 | 5.07 |
| 16 | 4.86 | 6.18 | 6.10 | 5.50 | 6.32 | 6.17 | 7.16 | 9.65 | 8.25 | 5.67 | 5.27 | 5.06 |
| 17 | 4.84 | 6.12 | 6.00 | 5.70 | 6.40 | 6.23 | 7.15 | 9.91 | 8.02 | 5.56 | 5.24 | 5.05 |
| 18 | 4.82 | 6.07 | 5.81 | 5.90 | 6.70 | 6.25 | 7.17 | 11.80 | 7.82 | 5.50 | 5.21 | 5.01 |
| 19 | 4.80 | 6.02 | 5.72 | 6.00 | 6.40 | 6.32 | 6.97 | 9.58 | 7.62 | 5.48 | 5.16 | 4.98 |
| 20 | 4.78 | 6.05 | 5.65 | 6.05 | 6.00 | 6.26 | 7.33 | 9.21 | 7.40 | 5.45 | 5.10 | 4.96 |
| 21 | 4.76 | 6.07 | 5.60 | 6.05 | 5.95 | 6.22 | 7.58 | 9.35 | 7.21 | 5.38 | 5.05 | 4.94 |
| 22 | 4.75 | 6.04 | 5.55 | 6.05 | 5.90 | 6.20 | 8.12 | 9.94 | 7.12 | 5.35 | 5.02 | 4.92 |
| 23 | 5.12 | 6.02 | 5.50 | 6.05 | 5.86 | 6.30 | 8.43 | 10.30 | 7.10 | 5.57 | 5.00 | 4.90 |
| 24 | 5.30 | 5.94 | 5.45 | 6.06 | 5.83 | 6.40 | 8.72 | 10.14 | 7.08 | 5.73 | 5.73 | 4.88 |
| 25 | 5.12 | 5.87 | 5.43 | 6.07 | 5.80 | 6.50 | 9.21 | 10.25 | 7.01 | 6.41 | 5.66 | 4.87 |
| 26 | 5.00 | 5.85 | 5.40 | 6.08 | 5.78 | 6.60 | 9.77 | 10.35 | 7.92 | 6.48 | 5.54 | 4.86 |
| 27 | 4.97 | 5.83 | 5.40 | 6.10 | 5.76 | 6.70 | 9.61 | 10.21 | 7.90 | 7.11 | 5.48 | 4.85 |
| 28 | 5.34 | 5.81 | 5.40 | 6.12 | 5.74 | 6.85 | 8.85 | 10.32 | 7.85 | 6.71 | 5.50 | 4.84 |
| 29 | 5.50 | 5.78 | 5.40 | 6.14 | ..... | 7.15 | 8.39 | 8.92 | 7.97 | 6.50 | 6.88 | 4.83 |
| 30 | 5.67 | 5.76 | 5.40 | 6.15 | ..... | 7.92 | 7.67 | 9.05 | 7.60 | 6.89 | 6.06 | 4.83 |
| 31 | 5.37 | ..... | 5.40 | 6.16 | ..... | 8.35 | ..... | 9.46 | ..... | 6.58 | 6.17 | ..... |

*Daily discharge, in second-feet, of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913.*

| Day. | Apr. | May. | June. | July. | Aug. | Sept. | Day. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910. | | | | | | | 1910. | | | | | | |
| 1 | 480 | 640 | 1,690 | 187 | 13 | 1 | 16 | 855 | 1,340 | 481 | 53 | 2 | 860 |
| 2 | 480 | 628 | 1,560 | 173 | 12 | 1 | 17 | 1,020 | 1,050 | 480 | 50 | 2 | 270 |
| 3 | 480 | 710 | 1,100 | 160 | 11 | 1 | 18 | 1,200 | 1,030 | 475 | 57 | 2 | 137 |
| 4 | 520 | 555 | 895 | 148 | 10 | 1 | 19 | 1,360 | 1,100 | 465 | 87 | 2 | 90 |
| 5 | 580 | 490 | 796 | 127 | 9 | 1 | 20 | 1,370 | 1,210 | 408 | 77 | 1 | 61 |
| 6 | 563 | 770 | 727 | 105 | 7 | 0 | 21 | 1,290 | 1,260 | 355 | 65 | 1 | 47 |
| 7 | 650 | 1,060 | 663 | 100 | 6 | 0 | 22 | 1,380 | 1,430 | 297 | 55 | 1 | 30 |
| 8 | 810 | 1,350 | 600 | 100 | 5 | 0 | 23 | 1,420 | 1,430 | 266 | 47 | 1 | 27 |
| 9 | 930 | 1,620 | 617 | 100 | 5 | 0 | 24 | 1,550 | 1,770 | 258 | 40 | 1 | 24 |
| 10 | 820 | 1,450 | 648 | 100 | 4 | 0 | 25 | 1,640 | 1,600 | 260 | 33 | 1 | 18 |
| 11 | 605 | 1,330 | 717 | 98 | 4 | 0 | 26 | 1,930 | 1,380 | 272 | 28 | 1 | 14 |
| 12 | 645 | 1,200 | 680 | 89 | 3 | 0 | 27 | 1,970 | 1,380 | 285 | 22 | 1 | 12 |
| 13 | 645 | 1,300 | 597 | 78 | 3 | 20 | 28 | 2,500 | 1,500 | 271 | 16 | 1 | 11 |
| 14 | 720 | 1,380 | 572 | 65 | 3 | 350 | 29 | 1,080 | 1,400 | 232 | 14 | 1 | 11 |
| 15 | 730 | 1,540 | 495 | 57 | 2 | 795 | 30 | 780 | 1,480 | 203 | 14 | 1 | 10 |
| | | | | | | | 31 | ..... | 1,720 | ..... | 13 | 1 | ..... |

*Daily discharge, in second-feet, of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | 9 | 13 | 67 | 27 | 1,560 | 150 | 1,060 | 900 | 1,120 | 1,740 | 320 | 45 |
| 2 | 9 | 12 | 54 | 27 | 1,260 | 151 | 1,120 | 870 | 1,650 | 2,000 | 280 | 42 |
| 3 | 9 | 11 | 182 | 27 | 980 | 275 | 1,080 | 1,060 | 2,000 | 2,160 | 245 | 38 |
| 4 | 9 | 11 | 200 | 27 | 700 | 330 | 882 | 1,450 | 2,450 | 2,080 | 222 | 36 |
| 5 | 7 | 10 | 150 | 27 | 450 | 200 | 906 | 1,580 | 2,680 | 2,080 | 210 | 32 |
| 6 | 5 | 10 | 147 | 27 | 382 | 183 | 746 | 947 | 2,500 | 2,100 | 190 | 29 |
| 7 | 5 | 10 | 260 | 27 | 370 | 184 | 637 | 860 | 2,480 | 2,050 | 174 | 26 |
| 8 | 5 | 9 | 260 | 27 | 323 | 265 | 610 | 940 | 2,220 | 1,800 | 167 | 22 |
| 9 | 4 | 8 | 220 | 37 | 316 | 322 | 722 | 1,000 | 2,280 | 1,670 | 152 | 20 |
| 10 | 4 | 8 | 810 | 146 | 280 | 345 | 510 | 970 | 2,700 | 1,730 | 143 | 17 |
| 11 | 12 | 20 | 610 | 156 | 248 | 257 | 428 | 1,200 | 3,100 | 1,870 | 135 | 16 |
| 12 | 110 | 150 | 302 | 90 | 240 | 234 | 365 | 1,240 | 3,280 | 1,820 | 126 | 14 |
| 13 | 202 | 105 | 165 | 96 | 256 | 235 | 330 | 1,100 | 3,220 | 1,910 | 114 | 13 |
| 14 | 182 | 98 | 120 | 140 | 221 | 248 | 315 | 1,020 | 3,000 | 1,860 | 105 | 13 |
| 15 | 170 | 95 | 105 | 290 | 214 | 245 | 365 | 765 | 3,150 | 1,830 | 105 | 11 |
| 16 | 159 | 71 | 90 | 218 | 207 | 300 | 460 | 634 | 3,280 | 1,800 | 94 | 11 |
| 17 | 146 | 67 | 79 | 165 | 198 | 332 | 544 | 569 | 3,200 | 1,720 | 87 | 10 |
| 18 | 120 | 93 | 81 | 145 | 194 | 350 | 733 | 698 | 3,220 | 1,720 | 82 | 9.4 |
| 19 | 93 | 102 | 60 | 173 | 190 | 385 | 832 | 1,180 | 3,350 | 1,450 | 78 | 9.4 |
| 20 | 74 | 95 | 45 | 330 | 172 | 404 | 824 | 1,440 | 3,420 | 1,150 | 75 | 8.8 |
| 21 | 58 | 102 | 35 | 295 | 169 | 399 | 820 | 1,680 | 2,900 | 880 | 68 | 8.0 |
| 22 | 50 | 95 | 35 | 181 | 172 | 450 | 935 | 2,040 | 2,880 | 750 | 63 | 7.4 |
| 23 | 43 | 113 | 38 | 192 | 172 | 495 | 1,100 | 2,240 | 2,100 | 685 | 58 | 7.4 |
| 24 | 37 | 152 | 48 | 430 | 162 | 493 | 1,320 | 2,010 | 1,500 | 630 | 53 | 7.0 |
| 25 | 30 | 147 | 45 | 310 | 159 | 535 | 1,460 | 2,000 | 1,620 | 616 | 48 | 6.6 |
| 26 | 24 | 128 | 38 | 173 | 151 | 548 | 1,460 | 1,190 | 2,250 | 535 | 47 | 10.0 |
| 27 | 21 | 102 | 39 | 142 | 150 | 550 | 1,020 | 1,320 | 2,780 | 500 | 45 | 8.0 |
| 28 | 18 | 88 | 35 | 250 | 150 | 595 | 710 | 1,440 | 2,550 | 458 | 43 | 7.4 |
| 29 | 16 | 80 | 35 | 2,300 | ..... | 700 | 648 | 1,420 | 2,250 | 438 | 43 | 7.0 |
| 30 | 15 | 85 | 35 | 7,000 | ..... | 834 | 763 | 1,150 | 1,900 | 395 | 48 | 6.6 |
| 31 | 15 | ..... | 27 | 2,850 | ..... | 1,000 | ..... | 1,210 | ..... | 353 | 46 | ..... |
| 1911–12. | | | | | | | | | | | | |
| 1 | 9.0 | 4.3 | 12 | 13 | 70 | 59 | 194 | 410 | 2,000 | 344 | 30 | 2 |
| 2 | 14 | 3.9 | 11 | 16 | 70 | 55 | 330 | 288 | 2,240 | 276 | 28 | 2 |
| 3 | 10 | 3.8 | 10 | 18 | 71 | 53 | 360 | 259 | 1,820 | 255 | 24 | 92 |
| 4 | 9.5 | 3.4 | 12 | 22 | 71 | 76 | 278 | 316 | 1,930 | 242 | 22 | 27 |
| 5 | 17 | 3.2 | 16 | 24 | 72 | 150 | 278 | 372 | 2,090 | 233 | 18 | 16 |
| 6 | 11 | 3.1 | 16 | 28 | 72 | 218 | 330 | 412 | 1,930 | 228 | 16 | 8 |
| 7 | 9.5 | 3.0 | 27 | 33 | 71 | 150 | 425 | 597 | 1,770 | 221 | 13 | 194 |
| 8 | 8.6 | 2.8 | 20 | 40 | 69 | 93 | 425 | 700 | 1,670 | 197 | 11 | 100 |
| 9 | 10 | 2.5 | 17 | 45 | 68 | 87 | 408 | 827 | 1,570 | 175 | 9 | 25 |
| 10 | 20 | 49 | 13 | 53 | 67 | 82 | 330 | 963 | 1,410 | 157 | 8 | 24 |
| 11 | 13 | 29 | 11 | 49 | 65 | 76 | 303 | 1,090 | 1,410 | 143 | 7 | 22 |
| 12 | 10 | 30 | 9.9 | 46 | 62 | 71 | 233 | 1,250 | 1,440 | 135 | 6 | 17 |
| 13 | 9.2 | 32 | 8.0 | 47 | 61 | 71 | 202 | 1,410 | 1,460 | 128 | 5 | 13 |
| 14 | 8.8 | 26 | 7.5 | 49 | 60 | 71 | 244 | 1,520 | 1,310 | 120 | 5 | 11 |
| 15 | 8.4 | 33 | 7.3 | 51 | 59 | 71 | 278 | 2,000 | 1,120 | 110 | 5 | 9 |
| 16 | 8.0 | 37 | 6.7 | 52 | 58 | 73 | 244 | 2,200 | 903 | 101 | 4 | 9 |
| 17 | 8.0 | 38 | 8.2 | 53 | 63 | 75 | 197 | 2,040 | 850 | 101 | 4 | 8 |
| 18 | 7.2 | 36 | 11 | 54 | 67 | 82 | 168 | 1,900 | 925 | 112 | 4 | 7 |
| 19 | 6.6 | 38 | 12 | 54 | 80 | 93 | 140 | 1,660 | 1,010 | 97 | 4 | 6 |
| 20 | 6.0 | 36 | 11 | 54 | 67 | 100 | 117 | 1,260 | 1,040 | 89 | 3 | 5 |
| 21 | 6.0 | 32 | 8.4 | 54 | 58 | 93 | 140 | 848 | 894 | 79 | 3 | 5 |
| 22 | 5.6 | 24 | 8.0 | 54 | 56 | 82 | 157 | 592 | 628 | 72 | 3 | 5 |
| 23 | 5.2 | 19 | 9.0 | 53 | 54 | 87 | 175 | 522 | 408 | 67 | 3 | 4 |
| 24 | 4.8 | 18 | 8.3 | 52 | 42 | 137 | 230 | 616 | 316 | 63 | 2 | 4 |
| 25 | 4.8 | 18 | 7.4 | 50 | 27 | 135 | 194 | 1,100 | 290 | 58 | 2 | 4 |
| 26 | 4.4 | 18 | 6.3 | 55 | 32 | 134 | 244 | 1,180 | 372 | 54 | 2 | 4 |
| 27 | 4.8 | 16 | 6.7 | 62 | 37 | 133 | 213 | 1,260 | 459 | 49 | 2 | 4 |
| 28 | 5.4 | 15 | 6.7 | 64 | 49 | 133 | 255 | 1,360 | 475 | 45 | 2 | 4 |
| 29 | 5.2 | 13 | 7.5 | 66 | 63 | 140 | 278 | 1,460 | 455 | 42 | 2 | 4 |
| 30 | 4.8 | 12 | 8.7 | 68 | ..... | 157 | 330 | 1,570 | 413 | 38 | 2 | 3 |
| 31 | 4.4 | ..... | 10.0 | 70 | ..... | 175 | ..... | 1,670 | ..... | 34 | 2 | ..... |

*Daily discharge, in second-feet, of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 3 | 12 | 37 | 16 | 73 | 34 | 652 | 267 | 1,080 | 260 | 87 | 108 |
| 2 | 3 | 11 | 28 | 18 | 71 | 33 | 448 | 259 | 1,160 | 186 | 66 | 65 |
| 3 | 2 | 10 | 20 | 22 | 70 | 58 | 285 | 434 | 1,030 | 155 | 62 | 52 |
| 4 | 2 | 16 | 14 | 18 | 66 | 87 | 278 | 743 | 1,450 | 143 | 53 | 43 |
| 5 | 4 | 22 | 11 | 16 | 62 | 106 | 437 | 1,070 | 1,720 | 115 | 45 | 36 |
| 6 | 4 | 628 | 12 | 13 | 58 | 112 | 253 | 1,280 | 1,660 | 106 | 38 | 25 |
| 7 | 4 | 628 | 13 | 11 | 60 | 126 | 208 | 1,300 | 1,220 | 99 | 33 | 20 |
| 8 | 4 | 194 | 14 | 9 | 62 | 148 | 198 | 1,270 | 944 | 93 | 29 | 13 |
| 9 | 4 | 194 | 14 | 8 | 64 | 185 | 271 | 1,330 | 854 | 82 | 24 | 11 |
| 10 | 3 | 375 | 12 | 7 | 66 | 190 | 362 | 1,180 | 610 | 73 | 28 | 10 |
| 11 | 3 | 194 | 11 | 6 | 67 | 181 | 488 | 1,020 | 444 | 64 | 83 | 8 |
| 12 | 3 | 140 | 10 | 6 | 70 | 119 | 544 | 717 | 482 | 55 | 33 | 6 |
| 13 | 3 | 112 | 9 | 6 | 72 | 101 | 472 | 670 | 579 | 48 | 22 | 6 |
| 14 | 2 | 92 | 12 | 7 | 77 | 63 | 350 | 710 | 635 | 41 | 17 | 6 |
| 15 | 2 | 82 | 34 | 11 | 82 | 66 | 258 | 923 | 628 | 35 | 13 | 6 |
| 16 | 2 | 74 | 67 | 22 | 89 | 73 | 225 | 1,120 | 544 | 32 | 10 | 5 |
| 17 | 2 | 69 | 58 | 34 | 99 | 80 | 223 | 1,260 | 466 | 26 | 9 | 5 |
| 18 | 1 | 65 | 42 | 49 | 140 | 82 | 228 | 2,270 | 398 | 22 | 8 | 5 |
| 19 | 1 | 60 | 35 | 58 | 99 | 89 | 188 | 1,090 | 336 | 20 | 7 | 4 |
| 20 | 1 | 63 | 30 | 63 | 58 | 83 | 262 | 919 | 278 | 18 | 6 | 4 |
| 21 | 1 | 65 | 28 | 63 | 54 | 79 | 324 | 985 | 237 | 15 | 5 | 4 |
| 22 | 1 | 62 | 24 | 63 | 49 | 77 | 498 | 1,280 | 216 | 13 | 5 | 3 |
| 23 | 6 | 60 | 22 | 63 | 46 | 87 | 604 | 1,460 | 214 | 26 | 5 | 3 |
| 24 | 11 | 53 | 18 | 64 | 44 | 99 | 708 | 1,380 | 210 | 36 | 36 | 2 |
| 25 | 6 | 47 | 17 | 65 | 41 | 112 | 920 | 1,440 | 196 | 100 | 31 | 2 |
| 26 | 5 | 45 | 16 | 66 | 40 | 126 | 1,190 | 1,490 | 430 | 110 | 24 | 2 |
| 27 | 4 | 44 | 16 | 67 | 38 | 140 | 1,100 | 1,420 | 424 | 215 | 20 | 2 |
| 28 | 17 | 42 | 16 | 69 | 37 | 166 | 764 | 1,470 | 408 | 141 | 22 | 2 |
| 29 | 22 | 40 | 16 | 70 | ..... | 223 | 592 | 790 | 447 | 112 | 171 | 2 |
| 30 | 32 | 39 | 16 | 71 | ..... | 430 | 350 | 850 | 329 | 173 | 64 | 2 |
| 31 | 17 | ..... | 16 | 72 | ..... | 576 | ..... | 1,030 | ..... | 123 | 73 | ..... |

*Monthly discharge of Cherry Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1910. | | | | |
| April | 2,500 | 480 | 1,030 | 61,300 |
| May | 1,770 | 490 | 1,230 | 75,600 |
| June | 1,690 | 203 | 579 | 34,500 |
| July | 187 | 18 | 76.1 | 4,680 |
| August | 13 | 1 | 3.8 | 234 |
| September | 860 | 0 | 93.1 | 5,540 |
| The period | | | | 182,000 |
| 1910–11. | | | | |
| October | 202 | 4 | 53.6 | 3,300 |
| November | 152 | 8 | 69.7 | 4,150 |
| December | 810 | 27 | 142 | 8,730 |
| January | 7,000 | 27 | 527 | 32,400 |
| February | 1,560 | 150 | 359 | 19,900 |
| March | 1,000 | 150 | 387 | 23,800 |
| April | 1,460 | 315 | 790 | 47,000 |
| May | 2,240 | 569 | 1,230 | 75,600 |
| June | 3,420 | 1,120 | 2,570 | 153,000 |
| July | 2,160 | 353 | 1,380 | 84,800 |
| August | 320 | 43 | 118 | 7,260 |
| September | 45 | 6.6 | 16.6 | 988 |
| The year | 7,000 | 4 | 637 | 461,000 |
| 1911–12. | | | | |
| October | 20 | 4.4 | 8.36 | 514 |
| November | 49 | 2.5 | 20.0 | 1,190 |
| December | 27 | 6.3 | 10.8 | 664 |
| January | 70 | 13 | 46.7 | 2,870 |
| February | 80 | 27 | 60.7 | 3,490 |
| March | 218 | 53 | 104 | 6,400 |
| April | 425 | 117 | 257 | 15,300 |
| May | 2,200 | 259 | 1,090 | 67,000 |
| June | 2,240 | 290 | 1,150 | 68,400 |
| July | 344 | 34 | 131 | 8,060 |
| August | 30 | 2 | 8.1 | 498 |
| September | 194 | 2 | 21.3 | 1,270 |
| The year | 2,240 | 2 | 242 | 176,000 |
| 1912–13. | | | | |
| October | 32 | 1 | 5.65 | 347 |
| November | 628 | 10 | 118 | 7,020 |
| December | 67 | 9 | 22.2 | 1,360 |
| January | 72 | 6 | 36.5 | 2,240 |
| February | 140 | 37 | 66.2 | 3,680 |
| March | 576 | 33 | 133 | 8,180 |
| April | 1,190 | 188 | 456 | 27,100 |
| May | 2,270 | 259 | 1,080 | 66,400 |
| June | 1,720 | 196 | 654 | 38,900 |
| July | 260 | 13 | 88.3 | 5,430 |
| August | 171 | 5 | 36.4 | 2,240 |
| September | 108 | 2 | 15.4 | 916 |
| The year | 2,270 | 1 | 226 | 164,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### ELEANOR CREEK NEAR SEQUOIA, CAL.

LOCATION.—In the SW. ¼ SE. ¼ sec. 34, T. 2 N., R. 19 E., in Yosemite National Park, 500 feet above trail bridge, half a mile below Lake Eleanor, about 12 miles north of Sequoia, and 26 miles by trail from Hamilton Station.

RECORDS AVAILABLE.—November 20, 1909, to September 30, 1913.

DRAINAGE AREA.—79 square miles[1] (above dam site, about three-fourths mile below station, in sec. 3, T. 1 N., R. 19 E.).

GAGE.—Vertical staff in two sections on right bank. No record of gages used previous to 1913.

CHANNEL.—Bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made fron cable at gage or by wading.

WINTER FLOW.—Discharge relation probably somewhat affected by ice.

COOPERATION.—Complete record furnished by city of San Francisco through M. M. O'Shaughnessy, city engineer.

*Daily gage height, in feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913.*

[O. J. Todd, observer.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1909–10. | | | | | | | | | | | |
| 1 | ..... | 4.81 | 7.12 | 3.31 | 3.45 | 4.15 | 4.79 | 4.77 | 2.38 | 1.30 | 0.85 |
| 2 | ..... | 8.10 | 5.58 | 3.21 | 3.78 | 4.35 | 4.61 | 4.68 | 2 29 | 1.28 | .84 |
| 3 | ..... | 5.76 | 4.45 | 3.13 | 4.08 | 4.40 | 4.56 | 4.38 | 2.25 | 1.24 | .84 |
| 4 | ..... | 4.53 | 3.95 | 3.08 | 4.28 | 4.50 | 4.36 | 4.10 | 2.19 | 1.19 | .83 |
| 5 | ..... | 4.39 | 3.66 | 3.02 | 4.34 | 4.70 | 4.13 | 3.91 | 2.12 | 1.16 | .82 |
| 6 | ..... | 3.69 | 3.51 | 2.99 | 4.27 | 4.67 | 4.05 | 3.76 | 2.03 | 1.14 | .80 |
| 7 | ..... | 3.62 | 3.38 | 2.99 | 4.22 | 4.69 | 4.37 | 3.66 | 1.97 | 1.11 | .79 |
| 8 | ..... | 3.50 | 3.28 | 2.97 | 4.28 | 4.93 | 4.91 | 3.56 | 1.95 | 1.08 | .78 |
| 9 | ..... | 5.43 | 3.18 | 2.95 | 4.31 | 5.32 | 5.41 | 3.45 | 1.92 | 1.06 | .77 |
| 10 | ..... | 4.89 | 3.10 | 2.91 | 4.33 | 5.48 | 5.46 | 3.42 | 1.91 | 1.04 | .76 |
| 11 | ..... | 4.19 | 3.04 | 2.89 | 4.37 | 5.39 | 5.49 | 3.44 | 1.87 | 1.03 | .75 |
| 12 | ..... | 3.86 | 2.95 | 2.92 | 4.40 | 4.98 | 5.06 | 3.42 | 1.85 | 1.01 | .74 |
| 13 | ..... | 3.66 | 2.93 | 2.97 | 4.46 | 4.64 | 5.10 | 3.39 | 1.80 | 1.00 | .74 |
| 14 | ..... | 3.55 | 2.95 | 3.01 | 4.55 | 4.94 | 5.01 | 3.33 | 1.78 | .98 | .82 |
| 15 | ..... | 3.34 | 2.99 | 3.04 | 4.32 | 5.12 | 5.05 | 3.27 | 1.73 | 1.07 | .84 |
| 16 | ..... | 3.25 | 3.05 | 2.98 | 4.03 | 5.37 | 5.01 | 3.15 | 1.72 | 1.06 | 1.19 |
| 17 | ..... | 3.18 | 3.03 | 2.96 | 3.89 | 5.68 | 4.68 | 3.12 | 1.68 | 1.04 | 1.41 |
| 18 | ..... | 3.08 | 3.01 | 2.93 | 4.41 | 5.96 | 4.56 | 3.09 | 1.65 | 1.05 | 1.47 |
| 19 | ..... | 3.00 | 2.99 | 2.97 | 6.84 | 6.13 | 4.45 | 3.05 | 1.65 | 1.03 | 1.50 |
| 20 | 3.76 | 2.96 | 2.95 | 2.97 | 7.39 | 6.37 | 4.47 | 2.99 | 1.68 | 1.00 | 1.48 |
| 21 | 9.30 | 2.90 | 2.90 | 2.93 | 5.78 | 5.94 | 4.48 | 2.91 | 1.67 | .99 | 1.46 |
| 22 | 7.30 | 2.85 | 2.97 | 2.91 | 5.08 | 5.85 | 4.58 | 2.75 | 1.67 | .98 | 1.44 |
| 23 | 5.48 | 2.79 | 3.34 | 2.92 | 4.72 | 5.87 | 4.71 | 2.76 | 1.61 | .97 | 1.41 |
| 24 | 4.85 | 2.72 | 3.78 | 2.91 | 4.37 | 5.97 | 4.83 | 2.68 | 1.58 | .97 | 1.38 |
| 25 | 7.00 | 2.69 | 3.76 | 3.02 | 4.09 | 5.97 | 4.85 | 2.58 | 1.57 | .96 | 1.36 |
| 26 | 5.39 | 2.66 | 3.67 | 3.04 | 3.84 | 6.14 | 4.71 | 2.57 | 1.54 | .95 | 1.33 |
| 27 | 4.61 | 2.61 | 3.59 | 3.06 | 3.70 | 6.16 | 4.63 | 2.56 | 1.50 | .93 | 1.31 |
| 28 | 4.05 | 2.58 | 3.41 | 3.11 | 3.59 | 7.14 | 4.61 | 2.54 | 1.43 | .92 | 1.28 |
| 29 | 3.91 | 2.57 | 3.35 | ..... | 3.57 | 6.71 | 4.58 | 2.50 | 1.39 | .91 | 1.24 |
| 30 | 3.82 | 2.56 | 3.33 | ..... | 3.68 | 5.50 | 4.62 | 2.46 | 1.38 | .88 | 1.21 |
| 31 | ..... | 8.07 | 3.31 | ..... | 3.89 | ..... | 4.79 | ..... | 1.34 | .86 | ..... |

[1] Freeman, J. R., The Hetch Hetchy water supply for San Francisco, p. 24, 1912.

*Daily gage height, in feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | 1.20 | 1.28 | 2.08 | 1.59 | 7.67 | 2.84 | 6.00 | 5.31 | 5.75 | 5.00 | 2.85 | 1.55 |
| 2 | 1.19 | 1.26 | 2.03 | 1.56 | 6.04 | 2.88 | 6.20 | 5.59 | 6.00 | 4.96 | 2.76 | 1.51 |
| 3 | 1.18 | 1.24 | 2.09 | 1.54 | 5.17 | 2.91 | 6.40 | 5.64 | 6.51 | 5.15 | 2.67 | 1.48 |
| 4 | 1.17 | 1.22 | 2.49 | 1.52 | 4.72 | 3.46 | 5.90 | 6.08 | 7.00 | 5.27 | 2.62 | 1.45 |
| 5 | 1.16 | 1.20 | 2.61 | 1.50 | 4.19 | 3.56 | 5.90 | 6.84 | 7.23 | 5.19 | 2.56 | 1.44 |
| 6 | 1.14 | 1.19 | 2.63 | 1.48 | 3.98 | 3.51 | 5.66 | 6.13 | 7.26 | 5.21 | 2.50 | 1.40 |
| 7 | 1.11 | 1.18 | 2.69 | 1.47 | 3.77 | 3.52 | 5.15 | 5.59 | 7.48 | 5.15 | 2.44 | 1.40 |
| 8 | 1.09 | 1.17 | 2.90 | 1.45 | 3.65 | 3.67 | 4.92 | 5.49 | 7.09 | 5.03 | 2.38 | 1.39 |
| 9 | 1.08 | 1.15 | 2.96 | 1.45 | 3.50 | 3.69 | 5.30 | 5.73 | 6.77 | 4.78 | 2.33 | 1.35 |
| 10 | 1.08 | 1.14 | 3.06 | 2.63 | 3.44 | 3.93 | 4.96 | 5.63 | 7.00 | 4.68 | 2.28 | 1.33 |
| 11 | 1.12 | 1.15 | 3.60 | 2.76 | 3.42 | 3.80 | 4.57 | 5.83 | 7.53 | 4.66 | 2.24 | 1.32 |
| 12 | 1.21 | 1.20 | 3.71 | 2.84 | 3.33 | 3.70 | 4.35 | 6.09 | 7.97 | 4.67 | 2.20 | 1.30 |
| 13 | 1.22 | 1.30 | 3.44 | 2.88 | 3.35 | 3.58 | 4.04 | 5.90 | 7.70 | 4.72 | 2.15 | 1.30 |
| 14 | 1.50 | 1.38 | 3.15 | 2.92 | 3.30 | 3.54 | 3.94 | 5.88 | 7.74 | 4.85 | 2.11 | 1.30 |
| 15 | 1.50 | 1.45 | 2.92 | 2.96 | 3.23 | 3.50 | 3.96 | 5.44 | 7.38 | 4.80 | 2.08 | 1.27 |
| 16 | 1.60 | 1.50 | 2.77 | 2.92 | 3.16 | 3.48 | 4.14 | 4.95 | 7.55 | 4.83 | 2.04 | 1.26 |
| 17 | 1.58 | 1.55 | 2.62 | 2.86 | 3.12 | 3.62 | 4.43 | 4.73 | 7.42 | 6.25 | 2.00 | 1.24 |
| 18 | 1.61 | 1.61 | 2.46 | 2.80 | 3.10 | 3.72 | 4.93 | 4.56 | 7.33 | 5.55 | 1.95 | 1.23 |
| 19 | 1.60 | 1.70 | 2.31 | 2.76 | 3.08 | 3.84 | 5.47 | 5.26 | 7.51 | 4.62 | 1.91 | 1.21 |
| 20 | 1.58 | 1.75 | 2.22 | 2.82 | 3.04 | 4.00 | 5.62 | 5.98 | 7.20 | 4.30 | 1.88 | 1.20 |
| 21 | 1.56 | 1.85 | 2.13 | 3.44 | 3.00 | 4.15 | 5.46 | 6.31 | 6.80 | 4.30 | 1.86 | 1.18 |
| 22 | 1.53 | 1.9 | 2.03 | 3.38 | 2.97 | 4.15 | 5.61 | 6.98 | 6.35 | 3.84 | 1.84 | 1.20 |
| 23 | 1.50 | 1.94 | 1.97 | 3.30 | 2.95 | 4.35 | 5.93 | 7.40 | 6.15 | 3.58 | 1.80 | 1.17 |
| 24 | 1.47 | 1.98 | 1.92 | 3.54 | 2.94 | 4.47 | 6.34 | 7.28 | 5.57 | 3.45 | 1.77 | 1.15 |
| 25 | 1.45 | 2.05 | 1.87 | 3.67 | 2.94 | 4.59 | 6.50 | 6.42 | 5.20 | 3.43 | 1.74 | 1.16 |
| 26 | 1.42 | 2.14 | 1.80 | 3.60 | 2.89 | 4.76 | 6.70 | 6.06 | 5.16 | 3.35 | 1.71 | 1.16 |
| 27 | 1.40 | 2.16 | 1.77 | 3.37 | 2.88 | 4.88 | 6.14 | 5.87 | 5.65 | 3.50 | 1.69 | 1.15 |
| 28 | 1.37 | 2.17 | 1.72 | 3.18 | 2.85 | 5.02 | 5.40 | 5.93 | 6.05 | 3.15 | 1.65 | 1.15 |
| 29 | 1.35 | 2.16 | 1.69 | 5.56 | ..... | 5.13 | 5.00 | 6.04 | 5.76 | 3.06 | 1.61 | 1.14 |
| 30 | 1.33 | 2.12 | 1.65 | 13.10 | ..... | 5.38 | 5.02 | 6.01 | 5.45 | 2.98 | 1.60 | 1.15 |
| 31 | 1.30 | ..... | 1.62 | 11.10 | ..... | 5.71 | ..... | 5.82 | ..... | 2.92 | 1.58 | ..... |
| 1911–12. | | | | | | | | | | | | |
| 1 | 1.15 | 1.09 | 1.31 | 1.31 | 2.17 | 1.95 | 3.06 | 4.13 | 5.8 | 2.88 | 1.53 | 1.00 |
| 2 | 1.16 | 1.09 | 1.31 | 1.31 | 2.18 | 2.00 | 3.25 | 3.98 | 6.0 | 2.77 | 1.49 | .98 |
| 3 | 1.15 | 1.08 | 1.30 | 1.32 | 2.18 | 2.02 | 3.45 | 3.75 | 6.4 | 2.70 | 1.49 | 1.03 |
| 4 | 1.13 | 1.07 | 1.30 | 1.33 | 2.18 | 2 10 | 3.65 | 3.8 | 6.25 | 2.65 | 1.47 | 1.02 |
| 5 | 1.13 | 1.07 | 1.30 | 1.33 | 2.18 | 2.24 | 3.72 | 3.93 | 6.05 | 2.60 | 1.40 | 1.01 |
| 6 | 1.13 | 1.06 | 1.31 | 1.34 | 2.18 | 2.57 | 3.72 | 4.05 | 5.8 | 2.56 | 1.37 | 1.00 |
| 7 | 1.12 | 1.05 | 1.31 | 1.37 | 2.18 | 2.73 | 3.92 | 4.4 | 5.6 | 2.53 | 1.34 | 1.10 |
| 8 | 1.12 | 1.05 | 1.31 | 1.40 | 2.16 | 2.73 | 4.17 | 4.7 | 5.3 | 2.50 | 1.31 | 1.12 |
| 9 | 1.14 | 1.05 | 1.30 | 1.42 | 2.15 | 2.67 | 4.30 | 5.0 | 4.9 | 2.47 | 1.30 | 1.17 |
| 10 | 1.14 | 1.09 | 1.30 | 1.46 | 2.15 | 2.62 | 4.12 | 5.1 | 4.55 | 2.43 | 1.27 | 1.18 |
| 11 | 1.13 | 1.11 | 1.30 | 1.55 | 2.16 | 2.57 | 3.90 | 5.5 | 4.4 | 2.42 | 1.25 | 1.19 |
| 12 | 1.14 | 1.20 | 1.30 | 1.58 | 2.15 | 2.52 | 3.63 | 5.54 | 4.4 | 2.40 | 1.23 | 1.20 |
| 13 | 1.15 | 1.21 | 1.29 | 1.57 | 2.15 | 2.53 | 3.40 | 5.9 | 4.7 | 2.30 | 1.21 | 1.19 |
| 14 | 1.14 | 1.21 | 1.28 | 1.60 | 2.14 | 2.49 | 3.30 | 5.8 | 4.54 | 2.25 | 1.19 | 1.18 |
| 15 | 1.13 | 1.22 | 1.27 | 1.65 | 2.14 | 2.47 | 3.33 | 6.0 | 4.3 | 2.22 | 1.17 | 1.18 |
| 16 | 1.12 | 1.26 | 1.26 | 1.74 | 2.14 | 2.49 | 3.36 | 6.25 | 4.1 | 2.17 | 1.16 | 1.17 |
| 17 | 1.12 | 1.27 | 1.28 | 1.81 | 2.14 | 2.47 | 3.42 | 6.1 | 3.98 | 2.12 | 1.15 | 1.17 |
| 18 | 1.11 | 1.28 | 1.27 | 1.83 | 2.24 | 2.46 | 3.42 | 6.25 | 3.85 | 2.10 | 1.14 | 1.16 |
| 19 | 1.11 | 1.30 | 1.28 | 1.84 | 2.26 | 2.53 | 3.36 | 6.15 | 3.85 | 2.07 | 1.13 | 1.16 |
| 20 | 1.11 | 1.31 | 1.27 | 1.85 | 2.27 | 2.58 | 3.23 | 5.65 | 3.85 | 2.04 | 1.12 | 1.14 |
| 21 | 1.11 | 1.32 | 1.26 | 1.86 | 2.23 | 2.56 | 3.12 | 5.2 | 3.8 | 2.00 | 1.11 | 1.13 |
| 22 | 1.10 | 1.32 | 1.26 | 1.90 | 2.22 | 2.55 | 3.00 | 4.7 | 3.65 | 1.95 | 1.10 | 1.12 |
| 23 | 1.10 | 1.33 | 1.26 | 1.90 | 2.20 | 2.60 | 2.92 | 4.3 | 3.5 | 1.90 | 1.09 | 1.10 |
| 24 | 1.10 | 1.33 | 1.25 | 1.91 | 2.11 | 2.66 | 3.05 | 4.16 | 3.34 | 1.87 | 1.08 | 1.09 |
| 25 | 1.10 | 1.33 | 1.24 | 1.93 | 2.57 | 2.76 | 3.13 | 4.36 | 3.13 | 1.82 | 1.07 | 1.08 |
| 26 | 1.10 | 1.32 | 1.24 | 2.03 | 2.03 | 2.86 | 3.21 | 4.7 | 3.03 | 1.78 | 1.06 | 1.07 |
| 27 | 1.10 | 1.32 | 1.23 | 2.12 | 2.00 | 2.86 | 3.34 | 5.0 | 2.97 | 1.73 | 1.05 | 1.06 |
| 28 | 1.10 | 1.32 | 1.28 | 2.12 | 1.97 | 2.90 | 3.45 | 5.15 | 3.00 | 1.70 | 1.04 | 1.05 |
| 29 | 1.10 | 1.31 | 1.30 | 2.15 | 1.95 | 3.05 | 3.77 | 5.7 | 3.01 | 1.66 | 1.04 | 1.04 |
| 30 | 1.10 | 1.31 | 1.30 | 2.16 | ..... | 3.10 | 4.00 | 6.3 | 2.99 | 1.61 | 1.03 | 1.04 |
| 31 | 1.10 | ..... | 1.30 | 2.17 | ..... | 3.05 | ..... | 5.75 | ..... | 1.57 | 1.02 | ..... |

*Daily gage height, in feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 1.03 | 0.88 | 1.79 | 1.48 | 2.12 | 2.08 | 4.6 | 3.85 | 4.15 | 3.25 | 1.86 | 1.90 |
| 2 | 1.03 | .92 | 1.75 | 1.47 | 2.14 | 2.05 | 4.9 | 3.70 | 4.12 | 3.10 | 1.82 | 2.03 |
| 3 | 1.02 | .94 | 1.72 | 1.47 | 2.15 | 2.00 | 4.3 | 3.60 | 4.10 | 2.90 | 1.79 | 2.10 |
| 4 | 1.01 | .96 | 1.69 | 1.46 | 2.16 | 2.05 | 3.9 | 3.90 | 4.20 | 2.75 | 1.76 | 2.02 |
| 5 | 1.00 | .98 | 1.65 | 1.46 | 2.17 | 2.15 | 4.15 | 4.40 | 4.35 | 2.65 | 1.73 | 1.95 |
| 6 | 1.00 | 1.05 | 1.62 | 1.45 | 2.18 | 2.28 | 4.3 | 4.97 | 4.50 | 2.57 | 1.69 | 1.89 |
| 7 | .99 | 1.90 | 1.59 | 1.44 | 2.19 | 2.43 | 4.3 | 5.28 | 4.82 | 2.50 | 1.65 | 1.84 |
| 8 | .98 | 2.15 | 1.57 | 1.43 | 2.20 | 2.58 | 4.2 | 5.35 | 4.47 | 2.43 | 1.62 | 1.79 |
| 9 | .97 | 2.23 | 1.54 | 1.45 | 2.21 | 2.75 | 4.0 | 5.15 | 4.25 | 2.36 | 1.59 | 1.73 |
| 10 | .96 | 2.53 | 1.51 | 1.40 | 2.22 | 2.92 | 3.8 | 5.06 | 4.10 | 2.30 | 1.56 | 1.67 |
| 11 | .95 | 2.65 | 1.48 | 1.35 | 2.23 | 3.02 | 4.2 | 4.95 | 3.90 | 2.24 | 1.53 | 1.62 |
| 12 | .94 | 2.71 | 1.45 | 1.37 | 2.24 | 3.00 | 4.5 | 4.60 | 3.65 | 2.17 | 1.55 | 1.58 |
| 13 | .93 | 2.80 | 1.42 | 1.40 | 2.26 | 2.90 | 4.7 | 4.35 | 3.50 | 2.10 | 1.55 | 1.58 |
| 14 | .92 | 2.70 | 1.39 | 1.45 | 2.28 | 2.78 | 4.3 | 4.20 | 3.55 | 2.03 | 1.53 | 1.53 |
| 15 | .91 | 2.60 | 1.57 | 1.55 | 2.31 | 2.68 | 4.0 | 4.20 | 3.48 | 1.97 | 1.51 | 1.48 |
| 16 | .90 | 2.50 | 1.60 | 1.65 | 2.39 | 2.58 | 3.75 | 4.35 | 3.47 | 1.92 | 1.49 | 1.45 |
| 17 | .89 | 2.43 | 1.57 | 1.74 | 2.46 | 2.58 | 3.65 | 4.63 | 3.35 | 1.87 | 1.47 | 1.43 |
| 18 | .88 | 2.36 | 1.53 | 1.82 | 2.53 | 2.65 | 3.63 | 6.00 | 3.80 | 1.82 | 1.46 | 1.40 |
| 19 | .87 | 2.30 | 1.57 | 1.88 | 2.48 | 2.71 | 3.55 | 5.80 | 3.35 | 1.78 | 1.44 | 1.38 |
| 20 | .86 | 2.26 | 1.58 | 1.90 | 2.43 | 2.60 | 3.57 | 5.20 | 3.15 | 1.74 | 1.42 | 1.36 |
| 21 | .85 | 2.21 | 1.58 | 1.92 | 2.36 | 2.65 | 3.66 | 4.66 | 2.98 | 1.70 | 1.40 | 1.34 |
| 22 | .84 | 2.16 | 1.58 | 1.93 | 2.30 | 2.71 | 4.0 | 4.70 | 2.88 | 1.67 | 1.37 | 1.32 |
| 23 | .87 | 2.10 | 1.58 | 1.94 | 2.24 | 2.70 | 4.3 | 4.73 | 2.80 | 1.68 | 1.35 | 1.30 |
| 24 | .88 | 2.06 | 1.56 | 1.95 | 2.22 | 2.69 | 4.65 | 4.76 | 2.74 | 1.68 | 1.34 | 1.28 |
| 25 | .88 | 2.02 | 1.55 | 1.96 | 2.19 | 2.63 | 5.0 | 4.65 | 2.70 | 1.68 | 1.33 | 1.26 |
| 26 | .87 | 1.97 | 1.54 | 1.97 | 2.15 | 2.60 | 5.5 | 4.65 | 2.75 | 1.75 | 1.31 | 1.24 |
| 27 | .86 | 1.93 | 1.53 | 1.99 | 2.13 | 2.57 | 5.75 | 4.85 | 3.30 | 1.85 | 1.30 | 1.22 |
| 28 | .86 | 1.89 | 1.52 | 2.01 | 2.11 | 2.65 | 5.15 | 5.00 | 3.40 | 1.92 | 1.30 | 1.20 |
| 29 | .88 | 1.85 | 1.51 | 2.03 | ..... | 2.75 | 4.6 | 4.80 | 3.46 | 1.98 | 1.42 | 1.18 |
| 30 | .88 | 1.82 | 1.50 | 2.04 | ..... | 3.20 | 4.15 | 4.45 | 3.40 | 1.93 | 1.55 | 1.16 |
| 31 | .87 | ..... | 1.49 | 2.05 | ..... | 4.00 | ..... | 4.28 | ..... | 1.90 | 1.65 | ..... |

*Daily discharge, in second-feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1909–10. | | | | | | | | | | | |
| 1 | ..... | 585 | 1,350 | 230 | 252 | 401 | 579 | 559 | 89 | 14 | 1 |
| 2 | ..... | 1,600 | 842 | 214 | 331 | 451 | 543 | 530 | 80 | 13 | 1 |
| 3 | ..... | 759 | 483 | 202 | 399 | 459 | 514 | 461 | 75 | 12 | .5 |
| 4 | ..... | 458 | 373 | 179 | 421 | 495 | 462 | 404 | 69 | 11 | .5 |
| 5 | ..... | 429 | 305 | 173 | 450 | 515 | 427 | 348 | 60 | 10 | .5 |
| 6 | ..... | 303 | 258 | 171 | 439 | 536 | 368 | 321 | 48 | 10 | .5 |
| 7 | ..... | 266 | 249 | 175 | 428 | 555 | 423 | 281 | 49 | 9 | .25 |
| 8 | ..... | 248 | 214 | 177 | 456 | 611 | 575 | 276 | 43 | 8 | 0 |
| 9 | ..... | 752 | 202 | 159 | 445 | 743 | 692 | 258 | 40 | 7 | 0 |
| 10 | ..... | 532 | 184 | 152 | 447 | 793 | 705 | 241 | 36 | 6 | 0 |
| 11 | ..... | 397 | 179 | 155 | 473 | 766 | 694 | 260 | 40 | 5 | 0 |
| 12 | ..... | 334 | 172 | 157 | 472 | 625 | 606 | 219 | 33 | 5 | 0 |
| 13 | ..... | 304 | 168 | 164 | 481 | 560 | 609 | 225 | 35 | 4 | 0 |
| 14 | ..... | 274 | 170 | 177 | 511 | 629 | 559 | 219 | 37 | 4 | 0 |
| 15 | ..... | 231 | 168 | 185 | 445 | 655 | 616 | 214 | 33 | 7 | .5 |
| 16 | ..... | 217 | 182 | 177 | 377 | 761 | 588 | 186 | 34 | 6 | 9 |
| 17 | ..... | 214 | 171 | 160 | 351 | 856 | 503 | 181 | 29 | 6 | 20 |
| 18 | ..... | 189 | 178 | 164 | 489 | 978 | 532 | 193 | 25 | 6 | 24 |
| 19 | ..... | 174 | 173 | 155 | 1,320 | 977 | 496 | 176 | 29 | 6 | 25 |
| 20 | 303 | 161 | 168 | 176 | 1,460 | 1,120 | 500 | 185 | 28 | 5 | 24 |
| 21 | 2,080 | 149 | 160 | 162 | 891 | 981 | 495 | 149 | 32 | 5 | 22 |
| 22 | 1,400 | 145 | 171 | 159 | 656 | 909 | 507 | 139 | 26 | 4 | 22 |
| 23 | 773 | 142 | 237 | 164 | 554 | 947 | 545 | 115 | 23 | 4 | 19 |
| 24 | 582 | 126 | 332 | 157 | 489 | 977 | 557 | 121 | 19 | 4 | 17 |
| 25 | 1,020 | 118 | 326 | 177 | 427 | 943 | 565 | 114 | 18 | 4 | 17 |
| 26 | 729 | 111 | 295 | 176 | 357 | 1,050 | 516 | 103 | 17 | 3 | 16 |
| 27 | 499 | 109 | 247 | 183 | 307 | 1,050 | 532 | 112 | 16 | 3 | 15 |
| 28 | 368 | 103 | 253 | 188 | 284 | 1,420 | 508 | 114 | 18 | 2 | 14 |
| 29 | 338 | 102 | 248 | ..... | 273 | 1,230 | 513 | 100 | 18 | 2 | 12 |
| 30 | 296 | 100 | 236 | ..... | 307 | 827 | 516 | 85 | 16 | 2 | 12 |
| 31 | ..... | 1,460 | 234 | ..... | 338 | ..... | 550 | ..... | 17 | 1 | ..... |

*Daily discharge, in second-feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | 11 | 13 | 63 | 29 | 1,450 | 123 | 965 | 766 | 840 | 607 | 150 | 23 |
| 2 | 10 | 12 | 56 | 29 | 960 | 132 | 1,040 | 706 | 965 | 628 | 138 | 21 |
| 3 | 10 | 11 | 69 | 27 | 654 | 146 | 1,020 | 793 | 1,150 | 667 | 127 | 19 |
| 4 | 8 | 11 | 97 | 25 | 517 | 234 | 895 | 849 | 1,290 | 700 | 120 | 18 |
| 5 | 8 | 10 | 113 | 25 | 399 | 279 | 925 | 1,240 | 1,370 | 662 | 112 | 17 |
| 6 | 7 | 10 | 114 | 23 | 331 | 259 | 803 | 913 | 1,350 | 669 | 105 | 15 |
| 7 | 7 | 10 | 108 | 22 | 288 | 255 | 698 | 741 | 1,510 | 650 | 96 | 15 |
| 8 | 7 | 9 | 159 | 22 | 290 | 302 | 593 | 666 | 1,380 | 626 | 90 | 15 |
| 9 | 6 | 8 | 158 | 23 | 264 | 297 | 721 | 814 | 1,240 | 580 | 84 | 14 |
| 10 | 5 | 8 | 189 | 102 | 231 | 362 | 601 | 820 | 1,330 | 496 | 80 | 14 |
| 11 | 6 | 8 | 281 | 124 | 246 | 310 | 500 | 842 | 1,450 | 527 | 74 | 14 |
| 12 | 9 | 11 | 276 | 150 | 218 | 304 | 450 | 914 | 1,720 | 473 | 71 | 13 |
| 13 | 10 | 14 | 258 | 155 | 230 | 295 | 375 | 866 | 1,630 | 515 | 65 | 13 |
| 14 | 20 | 17 | 184 | 147 | 194 | 270 | 353 | 878 | 1,500 | 594 | 63 | 13 |
| 15 | 20 | 19 | 171 | 166 | 218 | 252 | 342 | 709 | 1,480 | 560 | 60 | 12 |
| 16 | 26 | 21 | 142 | 150 | 191 | 274 | 413 | 632 | 1,570 | 600 | 56 | 12 |
| 17 | 22 | 24 | 124 | 144 | 178 | 277 | 461 | 509 | 1,460 | 970 | 53 | 11 |
| 18 | 27 | 27 | 100 | 141 | 170 | 307 | 561 | 508 | 1,380 | 759 | 48 | 11 |
| 19 | 26 | 30 | 102 | 137 | 183 | 330 | 724 | 686 | 1,510 | 520 | 45 | 10 |
| 20 | 25 | 33 | 54 | 136 | 172 | 361 | 789 | 960 | 1,360 | 440 | 42 | 10 |
| 21 | 24 | 38 | 59 | 221 | 166 | 388 | 744 | 985 | 1,140 | 440 | 41 | 9 |
| 22 | 25 | 52 | 63 | 220 | 155 | 381 | 815 | 1,280 | 1,030 | 333 | 40 | 10 |
| 23 | 24 | 54 | 52 | 210 | 146 | 457 | 880 | 1,480 | 1,020 | 275 | 37 | 9 |
| 24 | 22 | 56 | 48 | 276 | 161 | 480 | 1,020 | 1,420 | 754 | 253 | 35 | 8 |
| 25 | 21 | 60 | 48 | 285 | 160 | 492 | 1,040 | 1,120 | 664 | 246 | 33 | 8 |
| 26 | 19 | 64 | 42 | 284 | 135 | 546 | 1,070 | 831 | 696 | 233 | 31 | 8 |
| 27 | 18 | 65 | 41 | 236 | 157 | 569 | 1,070 | 893 | 844 | 262 | 30 | 8 |
| 28 | 17 | 69 | 36 | 210 | 119 | 588 | 788 | 951 | 906 | 200 | 27 | 8 |
| 29 | 16 | 75 | 36 | 786 | ..... | 619 | 652 | 869 | 870 | 182 | 26 | 7 |
| 30 | 15 | 72 | 31 | 5,000 | ..... | 690 | 609 | 864 | 797 | 172 | 25 | 8 |
| 31 | 14 | ..... | 30 | 3,670 | ..... | 851 | ..... | 895 | ..... | 162 | 23 | ..... |
| 1911–12. | | | | | | | | | | | | |
| 1 | 8 | 6 | 13 | 13 | 68 | 50 | 184 | 396 | 845 | 155 | 22 | 4 |
| 2 | 8 | 6 | 13 | 13 | 70 | 54 | 216 | 361 | 915 | 139 | 20 | 4 |
| 3 | 8 | 6 | 13 | 14 | 70 | 56 | 252 | 312 | 1,060 | 130 | 20 | 5 |
| 4 | 7 | 6 | 13 | 14 | 70 | 63 | 291 | 322 | 1,000 | 123 | 19 | 5 |
| 5 | 7 | 6 | 13 | 14 | 70 | 77 | 305 | 350 | 933 | 117 | 16 | 4 |
| 6 | 7 | 5 | 13 | 14 | 70 | 113 | 305 | 378 | 845 | 112 | 15 | 4 |
| 7 | 7 | 5 | 13 | 15 | 70 | 134 | 348 | 460 | 782 | 108 | 14 | 6 |
| 8 | 7 | 5 | 13 | 15 | 66 | 134 | 405 | 534 | 696 | 104 | 13 | 7 |
| 9 | 7 | 5 | 13 | 16 | 65 | 126 | 436 | 612 | 585 | 101 | 13 | 9 |
| 10 | 7 | 6 | 13 | 18 | 65 | 120 | 394 | 639 | 496 | 96 | 12 | 10 |
| 11 | 7 | 7 | 13 | 23 | 66 | 114 | 343 | 752 | 460 | 95 | 12 | 10 |
| 12 | 7 | 10 | 13 | 24 | 65 | 107 | 287 | 764 | 460 | 93 | 11 | 10 |
| 13 | 8 | 10 | 13 | 24 | 65 | 108 | 243 | 879 | 534 | 83 | 10 | 10 |
| 14 | 7 | 10 | 12 | 25 | 64 | 103 | 225 | 845 | 494 | 78 | 10 | 10 |
| 15 | 7 | 10 | 12 | 27 | 64 | 101 | 230 | 915 | 436 | 75 | 9 | 10 |
| 16 | 7 | 12 | 12 | 33 | 64 | 103 | 236 | 1,000 | 389 | 70 | 8 | 9 |
| 17 | 7 | 12 | 12 | 37 | 64 | 101 | 247 | 951 | 361 | 66 | 8 | 9 |
| 18 | 7 | 12 | 12 | 40 | 77 | 100 | 247 | 1,000 | 333 | 64 | 7 | 8 |
| 19 | 7 | 13 | 12 | 40 | 79 | 108 | 236 | 969 | 333 | 61 | 7 | 8 |
| 20 | 7 | 13 | 12 | 41 | 80 | 115 | 213 | 797 | 333 | 59 | 7 | 7 |
| 21 | 7 | 14 | 12 | 41 | 76 | 112 | 194 | 667 | 322 | 55 | 7 | 7 |
| 22 | 6 | 14 | 12 | 44 | 75 | 110 | 174 | 534 | 291 | 50 | 6 | 7 |
| 23 | 6 | 14 | 12 | 44 | 73 | 117 | 160 | 436 | 261 | 46 | 6 | 6 |
| 24 | 6 | 14 | 11 | 45 | 63 | 125 | 182 | 403 | 232 | 44 | 6 | 6 |
| 25 | 6 | 14 | 11 | 47 | 59 | 138 | 196 | 450 | 196 | 40 | 6 | 6 |
| 26 | 6 | 14 | 11 | 55 | 56 | 150 | 210 | 534 | 179 | 37 | 6 | 6 |
| 27 | 6 | 14 | 11 | 63 | 54 | 150 | 232 | 612 | 169 | 33 | 6 | 6 |
| 28 | 6 | 14 | 12 | 63 | 52 | 158 | 252 | 653 | 174 | 31 | 5 | 6 |
| 29 | 6 | 13 | 13 | 65 | 50 | 182 | 316 | 813 | 176 | 29 | 5 | 5 |
| 30 | 6 | 13 | 13 | 66 | ..... | 191 | 366 | 1,020 | 172 | 26 | 5 | 5 |
| 31 | 6 | ..... | 13 | 67 | ..... | 182 | ..... | 829 | ..... | 23 | 5 | ..... |

*Daily discharge, in second-feet, of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 5 | 2 | 37 | 20 | 66 | 62 | 509 | 333 | 400 | 217 | 43 | 46 |
| 2 | 5 | 2 | 35 | 19 | 67 | 60 | 585 | 301 | 394 | 191 | 40 | 58 |
| 3 | 5 | 3 | 33 | 19 | 68 | 55 | 436 | 280 | 389 | 158 | 38 | 64 |
| 4 | 4 | 4 | 30 | 18 | 69 | 60 | 343 | 343 | 412 | 137 | 36 | 57 |
| 5 | 4 | 4 | 28 | 18 | 70 | 68 | 400 | 460 | 448 | 123 | 33 | 50 |
| 6 | 4 | 6 | 26 | 18 | 71 | 81 | 436 | 604 | 484 | 113 | 30 | 45 |
| 7 | 4 | 46 | 24 | 18 | 72 | 96 | 436 | 689 | 564 | 104 | 28 | 42 |
| 8 | 4 | 67 | 23 | 17 | 73 | 114 | 412 | 709 | 477 | 96 | 26 | 38 |
| 9 | 4 | 75 | 22 | 18 | 74 | 137 | 366 | 653 | 424 | 89 | 25 | 33 |
| 10 | 4 | 108 | 21 | 16 | 75 | 161 | 322 | 628 | 389 | 83 | 23 | 29 |
| 11 | 3 | 123 | 19 | 14 | 76 | 177 | 412 | 598 | 343 | 77 | 22 | 26 |
| 12 | 3 | 131 | 18 | 15 | 77 | 174 | 484 | 509 | 291 | 70 | 23 | 24 |
| 13 | 3 | 144 | 17 | 16 | 79 | 158 | 534 | 448 | 261 | 64 | 23 | 24 |
| 14 | 2 | 130 | 16 | 18 | 81 | 141 | 436 | 412 | 271 | 58 | 22 | 22 |
| 15 | 2 | 117 | 23 | 22 | 84 | 127 | 366 | 412 | 257 | 52 | 21 | 20 |
| 16 | 2 | 104 | 25 | 28 | 92 | 114 | 311 | 448 | 256 | 47 | 20 | 18 |
| 17 | 2 | 96 | 23 | 34 | 100 | 114 | 291 | 516 | 234 | 44 | 19 | 17 |
| 18 | 2 | 89 | 22 | 40 | 108 | 123 | 287 | 915 | 225 | 40 | 18 | 16 |
| 19 | 1 | 83 | 23 | 44 | 102 | 131 | 271 | 845 | 234 | 37 | 18 | 15 |
| 20 | 1 | 79 | 24 | 46 | 96 | 117 | 275 | 667 | 200 | 34 | 17 | 15 |
| 21 | 1 | 74 | 24 | 47 | 89 | 123 | 293 | 524 | 171 | 31 | 16 | 14 |
| 22 | 1 | 68 | 24 | 48 | 83 | 131 | 366 | 534 | 155 | 29 | 15 | 14 |
| 23 | 1 | 64 | 24 | 49 | 77 | 130 | 436 | 542 | 145 | 30 | 14 | 13 |
| 24 | 2 | 61 | 23 | 50 | 75 | 129 | 522 | 549 | 136 | 30 | 14 | 12 |
| 25 | 2 | 57 | 22 | 51 | 72 | 121 | 612 | 522 | 130 | 30 | 14 | 12 |
| 26 | 1 | 52 | 22 | 52 | 68 | 117 | 752 | 522 | 137 | 35 | 13 | 11 |
| 27 | 1 | 48 | 22 | 54 | 66 | 113 | 829 | 572 | 225 | 42 | 13 | 11 |
| 28 | 1 | 46 | 21 | 56 | 65 | 123 | 653 | 612 | 243 | 47 | 13 | 10 |
| 29 | 2 | 42 | 21 | 58 | ..... | 137 | 509 | 559 | 254 | 53 | 17 | 9 |
| 30 | 2 | 40 | 20 | 59 | ..... | 208 | 400 | 472 | 243 | 48 | 23 | 8 |
| 31 | 1 | ..... | 20 | 60 | ..... | 366 | ..... | 431 | ..... | 46 | 18 | ..... |

*Monthly discharge of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1909–10. | | | | |
| November 20–30 | 2,080 | 296 | 763 | 16,600 |
| December | 1,600 | 100 | 358 | 22,000 |
| January | 1,350 | 160 | 288 | 17,700 |
| February | 230 | 152 | 174 | 9,660 |
| March | 1,460 | 252 | 495 | 30,400 |
| April | 1,420 | 401 | 794 | 47,200 |
| May | 705 | 368 | 542 | 33,300 |
| June | 559 | 85 | 230 | 13,700 |
| July | 89 | 16 | 36.5 | 2,240 |
| August | 14 | 1 | 6.1 | 375 |
| September | 25 | 0 | 9.09 | 541 |
| The period | ..... | ..... | ..... | 194,000 |
| 1910–11. | | | | |
| October | 27 | 5 | 15.6 | 959 |
| November | 75 | 8 | 30.4 | 1,810 |
| December | 281 | 30 | 107 | 6,580 |
| January | 5,000 | 22 | 425 | 26,100 |
| February | 1,450 | 119 | 307 | 17,000 |
| March | 851 | 123 | 369 | 22,700 |
| April | 1,070 | 342 | 731 | 43,500 |
| May | 1,480 | 508 | 884 | 54,400 |
| June | 1,720 | 664 | 1,210 | 72,000 |
| July | 970 | 162 | 484 | 29,800 |
| August | 150 | 23 | 65.4 | 4,020 |
| September | 23 | 7 | 12.4 | 738 |
| The year | 5,000 | 5 | 386 | 280,000 |

*Monthly discharge of Eleanor Creek near Sequoia, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1911–12. | | | | |
| October | 8 | 6 | 6.8 | 418 |
| November | 14 | 5 | 10.1 | 601 |
| December | 13 | 11 | 12.4 | 762 |
| January | 67 | 13 | 34.2 | 2,100 |
| February | 80 | 50 | 66.6 | 3,830 |
| March | 191 | 50 | 116 | 7,130 |
| April | 436 | 160 | 264 | 15,700 |
| May | 1,020 | 312 | 651 | 40,000 |
| June | 1,060 | 169 | 482 | 28,700 |
| July | 155 | 23 | 75.6 | 4,650 |
| August | 22 | 5 | 10.2 | 627 |
| September | 10 | 4 | 7.0 | 417 |
| The year | 1,060 | 4 | 145 | 105,000 |
| 1912–13. | | | | |
| October | 5 | 1 | 2.5 | 154 |
| November | 144 | 2 | 65.5 | 3,900 |
| December | 37 | 16 | 23.6 | 1,450 |
| January | 60 | 14 | 33.6 | 2,070 |
| February | 108 | 65 | 78.4 | 4,350 |
| March | 366 | 55 | 128 | 7,870 |
| April | 829 | 271 | 443 | 26,400 |
| May | 915 | 280 | 536 | 33,000 |
| June | 564 | 130 | 293 | 17,400 |
| July | 217 | 29 | 72.7 | 4,470 |
| August | 43 | 13 | 22.4 | 1,380 |
| September | 64 | 8 | 25.8 | 1,540 |
| The year | 915 | 1 | 144 | 104,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### JAWBONE CREEK NEAR TUOLUMNE, CAL.

LOCATION.—In the NE. ¼ sec. 33, T. 1 N., R. 18 E., at Jawbone ranger station, in Stanislaus National Forest, about 1 mile above junction with Tuolumne River, 14 miles southeast of Tuolumne, and 12 miles northeast of Groveland.

RECORDS AVAILABLE.—September 13, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections fastened to an alder tree on right bank 100 feet below trail crossing.

CHANNEL.—Gravel and bowlders; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from foot bridge about 1,000 feet below gage or by wading.

WINTER FLOW.—Discharge relation somewhat affected by ice.

DIVERSIONS.—Small irrigation ditch at ranger's station above the gage.

ACCURACY.—Rating curves not very well defined; results fair.

COOPERATION.—Station maintained in cooperation with the United States Forest Service.

*Discharge measurements of Jawbone Creek near Tuolumne, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| March 10 | 0.13 | 8.1 |
| May 1 | *a* .29 | 18 |

*a* Débris on control partly cleared away before measurement; reduced stage 0.02 foot.

*Daily gage height, in feet, of Jawbone Creek near Tuolumne, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | −0.10 | | | | 0.28 | | | |
| 2 | −0.60 | | | − .12 | | | | | | | |
| 3 | − .60 | | | | 0.04 | | | | | | |
| 4 | | −0.40 | | | .03 | | | | | −0.50 | |
| 5 | | − .42 | | | .02 | | | | −0.26 | | |
| 6 | − .58 | | | | .00 | 0.05 | | | | | |
| 7 | | | | | .05 | .07 | | .28 | − .35 | | |
| 8 | | | | | | | | .25 | | | −0.64 |
| 9 | | | | − .08 | | .12 | | .40 | | | |
| 10 | − .60 | + .40 | | | | .12 | | .32 | | | |
| 11 | − .60 | | | − .05 | | | 0.42 | .18 | | | |
| 12 | − .60 | | −0.15 | − .10 | | | | .10 | | | |
| 13 | − .60 | + .02 | − .15 | | | .04 | .50 | | − .40 | | |
| 14 | | | − .15 | − .03 | | | .58 | | | | |
| 15 | − .61 | − .09 | | + .28 | | | | | | | |
| 16 | − .11 | − .11 | + .03 | | | | .54 | | | | |
| 17 | − .61 | | | .28 | | | .43 | | − .50 | | |
| 18 | | | | .36 | | | | | | | − .65 |
| 19 | − .60 | | | .37 | − .05 | | | .00 | | | |
| 20 | − .60 | + .02 | | − .23 | | | | | − .50 | | |
| 21 | − .60 | − .03 | | | | | | | − .45 | − .62 | |
| 22 | − .59 | − .03 | | | − .10 | | .52 | | | | |
| 23 | − .40 | | | | | | .50 | − .10 | | | |
| 24 | − .50 | | | − .03 | | | .50 | | | | |
| 25 | | | | − .02 | | .23 | | | − .45 | | |
| 26 | − .53 | | | | − .04 | .12 | | | − .40 | − .50 | |
| 27 | | | | | | .28 | .55 | | − .34 | | |
| 28 | − .50 | | | | | | | | | | |
| 29 | | | | + .03 | | | | | | | |
| 30 | | | | + .04 | | .43 | .38 | | | | |
| 31 | | | − .10 | | | | | | | | − .66 |

*Daily discharge, in second-feet, of Jawbone Creek near Tuolumne, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | | | 5.1 | | 128 | 24 | 117 | 112 | 79 | 24 | | 4.8 |
| 2 | | 4.1 | 5.3 | | 88 | 23 | 117 | 112 | 79 | 24 | | 4.8 |
| 3 | | 4.1 | 20 | | 71 | 48 | 122 | 112 | 79 | 23 | | 4.8 |
| 4 | | 4.6 | 14 | 5.3 | 71 | 63 | 112 | 112 | 71 | 22 | | 4.8 |
| 5 | | 4.8 | | 5.3 | 56 | 65 | 201 | 117 | 71 | 22 | | 4.8 |
| 6 | | 5.1 | | 5.3 | 49 | 63 | 188 | 112 | 71 | 20 | | 5.0 |
| 7 | | 5.1 | 7.2 | 5.1 | 43 | 102 | 151 | 112 | 71 | 20 | | 5.0 |
| 8 | | 4.8 | 6.0 | 5.1 | 38 | 145 | 139 | 102 | 69 | 19 | | 4.8 |
| 9 | | 5.1 | 6.0 | 5.7 | 36 | 145 | 151 | 107 | 65 | 19 | | 4.8 |
| 10 | | | 9.0 | 22 | 32 | 145 | 139 | 102 | 62 | 56 | | 4.7 |
| 11 | | | 22 | 14 | 34 | 107 | 128 | 107 | 61 | 37 | | 4.5 |
| 12 | 9.0 | | 9.0 | 13 | 34 | 88 | 117 | 102 | 59 | | | 4.5 |
| 13 | | 6.0 | 7.2 | 25 | 32 | 79 | 107 | 102 | 57 | 43 | | 4.5 |
| 14 | | 5.7 | 6.0 | 28 | 34 | 71 | 107 | 97 | 55 | | | 4.3 |
| 15 | | 5.3 | 6.0 | 29 | 31 | 71 | 107 | 97 | 49 | 22 | | 4.3 |
| 16 | 5.3 | 5.3 | 5.7 | 20 | 31 | 71 | 107 | 92 | 49 | | | 4.3 |
| 17 | | 5.3 | | 17 | 31 | 75 | 107 | 88 | 48 | | | 4.3 |
| 18 | | 9.4 | | 15 | 30 | 71 | 112 | 88 | 45 | | | 4.3 |
| 19 | | | | 13 | | 75 | 112 | 88 | 43 | | | 4.3 |
| 20 | 4.1 | | | 56 | 26 | 79 | 117 | 88 | 40 | | | 4.1 |
| 21 | | | | 56 | 24 | 79 | 112 | 92 | 38 | | | 4.1 |
| 22 | | | | 35 | 24 | 75 | 112 | 97 | 37 | | | 4.1 |
| 23 | | | | 28 | 25 | 79 | 117 | 97 | 35 | | | 4.7 |
| 24 | | | | 150 | 24 | 79 | 122 | 92 | 33 | 7.2 | | 4.3 |
| 25 | | | | 137 | 22 | | 128 | 92 | 32 | 7.0 | | 4.8 |
| 26 | 4.6 | | | 66 | 56 | 97 | 128 | 88 | 31 | 7.0 | | 4.7 |
| 27 | | | | 48 | 22 | 88 | 122 | 84 | 30 | 7.0 | | 4.5 |
| 28 | | 5.3 | | 41 | 20 | 88 | 112 | 84 | 28 | 7.0 | | 5.2 |
| 29 | | 5.3 | | 311 | | 92 | 112 | 79 | 27 | 6.5 | | 6.5 |
| 30 | 4.1 | 5.1 | | 394 | | 102 | 112 | 79 | 26 | 5.8 | | 7.0 |
| 31 | | | | 312 | | 107 | | 79 | | 4.8 | | |

*Daily discharge, in second-feet, of Jawbone Creek near Tuolumne, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 7.5 | 18 | | | 30 | | | 50 | | 2.8 | | |
| 2 | 8.8 | 18 | 26 | | 28 | | | | 32 | | | |
| 3 | | 18 | 26 | 28 | | | | | | | | |
| 4 | | 18 | 28 | 32 | 28 | | | 48 | | 2.1 | 1.2 | 1.2 |
| 5 | | 18 | 28 | 31 | 28 | | | | | | 1.2 | |
| 6 | 8.8 | 18 | 33 | | | | | 45 | | | | |
| 7 | | 18 | | | | | | | 18 | | | 2.5 |
| 8 | | | 28 | | 27 | | | | | | | |
| 9 | | | 28 | | 27 | | | | 17 | 1.9 | | |
| 10 | | | 28 | | 27 | | | | 17 | 1.6 | | 1.2 |
| 11 | 12 | 27 | 26 | | 27 | | | 47 | | | | |
| 12 | 14 | 26 | 26 | | 27 | | | 47 | 17 | 1.6 | 1.0 | |
| 13 | 14 | 26 | | | | | | 49 | 15 | | | |
| 14 | 15 | 26 | 27 | | 26 | | | | | 1.6 | | 1.1 |
| 15 | | | | | 26 | | | 47 | 10 | | | 1.1 |
| 16 | 14 | 28 | | | 26 | | | | 8.8 | 1.6 | | 1.1 |
| 17 | 14 | 28 | | 31 | | | | 48 | | 1.5 | | 1.0 |
| 18 | 16 | 28 | | 30 | | | | 49 | | | | 1.0 |
| 19 | 17 | | | | | | | 45 | | 1.5 | | 1.0 |
| 20 | 18 | | 36 | | 26 | 18 | 18 | 47 | 6.3 | 1.4 | | 1.0 |
| 21 | 18 | 26 | 36 | 28 | 26 | 15 | 18 | 47 | 6.3 | | | 1.0 |
| 22 | 17 | 26 | | 28 | 24 | | 17 | | 5.9 | 1.4 | | 1.0 |
| 23 | | | | | | | 18 | 45 | 7.5 | 1.4 | | |
| 24 | 17 | | 30 | | 24 | 16 | 22 | 42 | 6.3 | | | |
| 25 | 17 | | 30 | | | 16 | 19 | 49 | 4.8 | 1.4 | .9 | 1.0 |
| 26 | 17 | | 32 | 28 | 24 | 15 | 25 | 47 | 4.0 | | .9 | .9 |
| 27 | | | 28 | | 24 | | 22 | 44 | 4.0 | | .9 | .9 |
| 28 | 20 | | 30 | 31 | 24 | | | | 3.5 | 1.2 | .8 | |
| 29 | 19 | | 32 | | 24 | | 42 | 40 | 3.2 | | .8 | .9 |
| 30 | | | 32 | | | | 52 | | | | | |
| 31 | | | | 30 | | | | 33 | | | | |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | | | | 5.5 | | | | 16 | | | |
| 2 | 1.0 | | | 5.2 | | | | | | | |
| 3 | 1.0 | | | | 8.5 | | | | | | |
| 4 | | 2.0 | | | 8.2 | | | | | 1.5 | |
| 5 | | 1.9 | | | 8.0 | | | | 3.4 | | |
| 6 | 1.1 | | | | 7.5 | 8.8 | | | | | |
| 7 | | | | | 8.8 | 9.2 | | 16 | 2.5 | | |
| 8 | | | | | | | | 15 | | | 0.8 |
| 9 | | | | 5.9 | | 11 | | 21 | | | |
| 10 | 1.0 | 21 | | | | 11 | | 18 | | | |
| 11 | 1.0 | | | 6.5 | | | 22 | 12 | | | |
| 12 | 1.0 | | 4.8 | 5.5 | | | | 10 | | | |
| 13 | 1.0 | 8.0 | 4.8 | | | 8.5 | 26 | | | | |
| 14 | | | 4.8 | 6.9 | | | 30 | | 2.0 | | |
| 15 | 1.0 | 5.7 | | 16 | | | | | | | |
| 16 | 1.0 | 5.4 | 8.2 | | | | 28 | | | | |
| 17 | 1.0 | | | 16 | | | 22 | | 1.5 | | |
| 18 | | | | 19 | | | | | | | .8 |
| 19 | 1.0 | | | 20 | 6.5 | | | 7.5 | | | |
| 20 | 1.0 | 8.0 | | 3.7 | | | | | 1.5 | | |
| 21 | 1.9 | 6.9 | | | | | | | 1.8 | .9 | |
| 22 | 1.9 | 6.9 | | | 5.5 | | 27 | | | | |
| 23 | 2.0 | | | | | | 26 | 5.5 | | | |
| 24 | 1.5 | | | 6.9 | | | 26 | | | | |
| 25 | | | | 7.1 | | 14 | | | 1.8 | | |
| 26 | 1.4 | | | | 6.7 | 11 | | | 2.0 | 1.5 | |
| 27 | | | | | | 16 | 28 | | 2.6 | | |
| 28 | 1.5 | | | | | | | | | | |
| 29 | | | | 8.2 | | | | | | | |
| 30 | | | | 8.5 | | 22 | 20 | | | | .7 |
| 31 | | | 5.5 | | | | | | | | |

NOTE.—Discharge determined from three fairly well defined rating curves.

### CORRAL CREEK NEAR GROVELAND, CAL.

LOCATION.—At Clavey trail crossing, 1 mile west of Jawbone ranger station, in Stanislaus National Forest, about a mile above junction with Tuolumne River, 11 miles northeast of Groveland, and 13 miles southeast of Tuolumne.

RECORDS AVAILABLE.—October 21, 1910, to September 30, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on right bank at trail crossing.

CHANNEL.—Bowlders and gravel; rough; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made by wading.

WINTER FLOW.—Discharge relation probably affected by ice.

ACCURACY.—Rating curves not very well defined; results fair. High water not estimated because no high-water measurements were obtained.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Corral Creek near Groveland, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Mar. 10 | 1.00 | 1.4 |
| Apr. 30 | .82 | 1.2 |

*Daily gage height, in feet, of Corral Creek near Groveland, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | | 0.98 | | 1.00 | | | | | |
| 3 | 0.70 | | | | | | | | | |
| 4 | | | | | | | | | 0.65 | |
| 5 | | | | | 1.00 | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | .88 | | | | | | | .64 | 0.54 |
| 9 | | | | | 1.00 | | | | | |
| 10 | | | | | 1.00 | | | | | |
| 11 | | | | | | | | | .65 | |
| 12 | | | | | | | | | | |
| 13 | | .98 | | | .98 | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | .70 | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | 0.80 | | | |
| 19 | | | | | | | .78 | | | |
| 20 | | | | | | | | | | |
| 21 | | 1.09 | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | .67 | |
| 26 | | | | | | | | | | |
| 27 | .78 | | | 1.00 | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | 0.82 | | 0.69 | | .64 |
| 31 | | | | | | | | | | |

*Daily discharge, in second-feet, of Corral Creek near Groveland, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | | | 1.1 | | | | | | 4.8 | | | |
| 2 | | | | | | | 12 | | | | | |
| 3 | | | | | | | | | 4.1 | | 1.8 | |
| 4 | | 0.9 | | | | | 10 | | | | | |
| 5 | | | | 1.1 | | | | | | | | |
| 6 | | 1.0 | | | | | | | | | | |
| 7 | | | | | | | | | 3.7 | 2.4 | | |
| 8 | | | | | 12 | | | | 3.7 | | | 1.3 |
| 9 | | | | | 10 | | | 5.9 | | 2.1 | | |
| 10 | | | | | | | | | 3.2 | 1.3 | | |
| 11 | | | 3.7 | | | | | | | 2.0 | | |
| 12 | | | | | | | | | | 2.4 | | |
| 13 | | 1.1 | | | | | | | | 2.4 | | |
| 14 | | | | 8.5 | | | | | | | | |
| 15 | | | | 5.9 | 8.5 | | | | | | 1.2 | |
| 16 | | | | 2.4 | | | 8.5 | | | | 1.3 | |
| 17 | | | | | 8.5 | | | 2.1 | | | | 1.3 |
| 18 | | | | 1.3 | | | | | | 2.0 | | 1.3 |
| 19 | | | | | | | | | | 2.1 | | |
| 20 | | | | | | | | | | 1.9 | | |
| 21 | 0.9 | | | 12 | 8.5 | | | | | 2.1 | | |
| 22 | | | | 5.5 | | | | | | | | |
| 23 | | | | | | | | | | 1.9 | | |
| 24 | | | | | | | | | | | 1.5 | |
| 25 | | | | | | | 8.5 | 4.8 | | 1.5 | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | | | 8.5 | | 12 | | | 2.4 | 1.5 | 1.1 | |
| 29 | | | | | | | 7.2 | | | 1.9 | 1.1 | |
| 30 | | | | | | | 8.0 | | | 1.7 | | |
| 31 | | | | | | | | | | | | |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | |
| 1 | | | | | | | | 1.4 | | | 0.4 |
| 2 | | | | | | | | | | | |
| 3 | | | | 3.1 | | | | | | 0.4 | |
| 4 | | | 2.1 | | | | | | | | |
| 5 | | | 2.1 | 3.5 | 2.6 | | | | | | |
| 6 | 1.9 | 1.7 | 2.9 | | | | | | | | |
| 7 | | | 2.1 | | | | | | | | |
| 8 | | | 2.0 | | | | | | | | .6 |
| 9 | | | 2.0 | | | | | | | .4 | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | 0.5 | | |
| 12 | 1.9 | | 1.9 | | | | | | .6 | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | 1.6 | 2.1 | | | | | 10 | | | | |
| 16 | | | 1.9 | | | | | | | | |
| 17 | | 2.1 | | 3.4 | | | | | | | |
| 18 | | | | | | | 4.8 | | | | |
| 19 | | | | | | | 4.2 | | | | |
| 20 | | 2.0 | | | | | | | | .4 | |
| 21 | | | 2.1 | 2.9 | | | 3.4 | | | | |
| 22 | | 1.8 | 2.0 | | | | | .8 | | | |
| 23 | | | | | | | | | | | .5 |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | 3.2 | | 7.2 | | | | | .5 |
| 27 | | | | | | | 3.0 | | | | |
| 28 | 1.8 | | | | | | | .6 | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | 3.7 | | | | | | | |

*Daily discharge, in second-feet, of Corral Creek near Groveland, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | |
| 1 | | | | | | | | | | |
| 2 | | | 2.5 | | 1.4 | | | | | |
| 3 | 0.6 | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | 1.4 | | | | 0.4 | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | 1.6 | | | | | | | | |
| 9 | | | | | 1.4 | | | | .4 | 0.1 |
| 10 | | | | | 1.4 | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | .4 | |
| 13 | | 2.5 | | | 1.3 | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | .6 | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | 1.0 | | | |
| 20 | | | | | | | .9 | | | |
| 21 | | 4.0 | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | .5 | |
| 26 | | | | | | | | | | |
| 27 | .9 | | | 1.4 | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | 1.2 | | 0.6 | | .4 |

NOTE.—Discharge determined from three not well defined rating curves applicable as follows: First Oct. 21, 1910, to March, 1912; second, April, 1912, to January, 1913, and Apr. 30, 1913, to Sept. 30, 1913; third, February to Apr. 29, 1913.

### SOUTH FORK OF TUOLUMNE RIVER NEAR GROVELAND, CAL

LOCATION.—At South Fork trail bridge, in Stanislaus National Forest, one-fourth mile above junction with Tuolumne River, and 9 miles east of Groveland. The Middle Fork enters about 2½ miles above the station.

RECORDS AVAILABLE.—September 13, 1910, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on middle pier of bridge at downstream end.

CHANNEL.—Bowlders and gravel; very rough.

DISCHARGE MEASUREMENTS.—Made by wading.

DIVERSIONS.—At the Harden ranch, 7 miles above the mouth, water is diverted and not returned to the river.

ACCURACY.—Rating curve fairly well defined at medium and low stages; results fair. No estimates have been prepared for high water.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

The following discharge measurement was made by H. J. Tompkins:

March 8, 1913: Gage height, 1.20 feet; discharge, 56 second-feet.

*Daily gage height, in feet, of South Fork of Tuolumne River near Groveland, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | 1.8 | | | |
| 3 | | | | 0.72 | | | | 1.9 | 2.2 | | |
| 4 | | | | | | 1.0 | | 2.3 | 2.0 | | |
| 5 | 0.40 | 0.60 | | | | 1.02 | | 2.5 | | | |
| 6 | | | | | | | | 2.4 | | | |
| 7 | | .70 | | | | 1.2 | | 2.8 | | | |
| 8 | .42 | | | | | 1.2 | | 2.65 | | | |
| 9 | .42 | | | | | 1.2 | | | | | |
| 10 | | | | | | 1.25 | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | .77 | | | | | 1.85 | | | | |
| 13 | .55 | | | | | | | | | | |
| 14 | | | 0.65 | | | | | 2.2 | | | |
| 15 | | .72 | .80 | | | | 1.8 | | | | 0.70 |
| 16 | .40 | | | | | | | | | | |
| 17 | | .65 | | | | 1.1 | | 2.45 | | | |
| 18 | .44 | | | | 1.02 | | | | | | |
| 19 | | .68 | | | | | | | | .85 | |
| 20 | .46 | | | | | | | | | | |
| 21 | | | | | | | | 2.5 | | | |
| 22 | | | | | 1.05 | | | | | | .87 |
| 23 | .53 | | | 1.0 | | | | | | 1.0 | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | 2.3 | | | | |
| 26 | | | | | 1.0 | | 2.4 | | | 1.2 | |
| 27 | | | | | | | 2.55 | | | | |
| 28 | | | | .97 | | | 2.3 | | | | |
| 29 | .59 | | | | | 1.4 | 2.15 | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | 1.0 | | | | | | 1.0 | |

NOTE.—Backwater present July to September, owing to a small loose rock dam.

*Daily discharge, in second-feet, of South Fork of Tuolumne River near Groveland, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | 127 | | | |
| 3 | | | | 22 | | | | 143 | 198 | | |
| 4 | | | | | | 39 | | 218 | 160 | | |
| 5 | 9.0 | 17 | | | | 41 | | 264 | | | |
| 6 | | | | | | | | 240 | | | |
| 7 | | 21 | | | | 56 | | 340 | | | |
| 8 | 9.8 | | | | | 56 | | 301 | | | |
| 9 | 9.8 | | | | | 56 | | | | | |
| 10 | | | | | | 60 | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | 24 | | | | | 135 | | | | |
| 13 | 15 | | | | | | | | | | |
| 14 | | | 19 | | | | | 198 | | | |
| 15 | | 22 | 26 | | | | 127 | | | | 3 |
| 16 | 9.0 | | | | | | | | | | |
| 17 | | 19 | | | | 41 | | 252 | | | |
| 18 | 11 | | | | 41 | | | | | | |
| 19 | | 20 | | | | | | | | 7 | |
| 20 | 11 | | | | | | | | | | |
| 21 | | | | | | | | 264 | | | |
| 22 | | | | | 43 | | | | | | 7.8 |
| 23 | 14 | | | 39 | | | | | | 15 | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | 218 | | | | |
| 26 | | | | | 39 | | 240 | | | 33 | |
| 27 | | | | | | | 276 | | | | |
| 28 | | | | 37 | | | 218 | | | | |
| 29 | 17 | | | | | 77 | 188 | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | 39 | | | | | | 15 | |

NOTE.—Discharge determined from two fairly well defined rating curves applicable Oct. 1, 1912, to June 4, 1913, and July 19 to Sept. 30, 1913.

### CLAVEY RIVER NEAR TUOLUMNE, CAL.

LOCATION.—In the NW. ¼ SW. ¼ sec. 24, T. 1 N., R. 17 E., in Stanislaus National Forest, below Luke Meadow trail bridge, about 11 miles above junction with Tuolumne River, and 10 miles southeast of Tuolumne.

RECORDS AVAILABLE.—September 12, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on left bank 300 feet below trail bridge.

CHANNEL.—Bowlders and solid rock; rough; current swift at all stages.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet below gage or by wading.

ACCURACY.—Rating curve fairly well defined for low and medium stages; results fair for periods covered by gage-height records.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Clavey River near Tuolumne, Cal., during the year ending Sept. 30, 1913.*

[Made by H. J. Tompkins.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Mar. 10 | 2.30 | 165 |
| Apr. 29 | 3.85 | 521 |

*Daily gage height, in feet, of Clavey River near Tuolumne, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Mar. | Apr. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | 1.28 | | | | |
| 4 | | | | | | | | | |
| 5 | | | | 0.30 | 1.5 | | | | |
| 6 | | | | | | | | | |
| 7 | 0.50 | | | .90 | | | | | |
| 8 | | 1.7 | | | | | | 0.90 | |
| 9 | | 1.44 | | | | | | | |
| 10 | | | | | 2.3 | | | | |
| 11 | | | 0.56 | | | | | .86 | |
| 12 | | | | | | | | | |
| 13 | | | | | 1.95 | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | .80 | | | | | | |
| 20 | | | | | | | | | |
| 21 | | 1.10 | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | 1.05 | | | | | | | |
| 24 | .60 | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | .55 | | | 1.20 | | | | | |
| 28 | | | | | | | 2.4 | | 0.25 |
| 29 | | | | | | 3.8 | | | |
| 30 | | | | | | 3.4 | 2.0 | | |
| 31 | | | | | | | | | |

*Daily discharge, in second-feet, of Clavey River near Tuolumne, Cal., for the years ending Sept. 30, 1910–1913.*

| Day. | Sept. | Day. | Sept. |
|---|---|---|---|
| 1910. | | 1910. | |
| 11 | | 16 | |
| 12 | 12 | 17 | |
| 13 | | 18 | |
| 14 | | 19 | |
| 15 | | 20 | 9.6 |

| Day. | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | |
| 1 | | | 38 | 1,930 | | | | 1,280 | | | |
| 2 | | | | | | | 1,370 | | | | |
| 3 | | | | | | | | 1,190 | | | |
| 4 | | | | 922 | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | 510 | | | | | | | |
| 9 | | | | 510 | | | 1,280 | | 456 | | |
| 10 | | | | | | | | 1,370 | | | |
| 11 | | | | | | | | | 404 | | |
| 12 | | | | | | | | | | | |
| 13 | | 35 | | | | | | | | | |
| 14 | | | | | | | | | | 61 | |
| 15 | | | | | | | | | | 47 | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | 1,140 | | | 35 |
| 18 | | | | 306 | | | 882 | | | 69 | 32 |
| 19 | | | | | | | | | | 69 | |
| 20 | 30 | | | 306 | | | | | | | |
| 21 | | | | 306 | | | | 964 | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | 200 | | |
| 24 | | | | | 922 | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | 1,010 | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | 1,370 | | | | | | |
| 29 | | | | | | 1,280 | | | 122 | | |
| 30 | | | | | | 1,280 | | | 128 | | |
| 31 | | | | | | | | | | | |

*Daily discharge, in second-feet, of Clavey River near Tuolumne, Cal., for the years ending Sept. 30, 1910–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May. | June. | Aug. |
|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | |
| 1 | | | | | | | | 598 | |
| 2 | | | | | | | | | |
| 3 | | | | | | | 404 | | |
| 4 | 32 | | | | | | | | |
| 5 | | | 122 | | | | | | |
| 6 | | 28 | | | | | | | |
| 7 | | 28 | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | 18 |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | 30 | 34 | | | | 220 | | | |
| 16 | | | 32 | 61 | | | | | |
| 17 | | 39 | | 62 | | 230 | | | |
| 19 | | | 22 | | 106 | 240 | | | |
| 19 | | | | 67 | | 251 | | | |
| 20 | | 58 | | | | 200 | | 182 | |
| 21 | | | 26 | | | | | | |
| 22 | 41 | 35 | 33 | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | 28 | | | | 149 | | | | 13 |
| 27 | | | | | | | | | |
| 28 | 30 | | | | | | | 38 | |
| 29 | | | | | | | | | |
| 30 | | | | | | | | | |
| 31 | | | | | | | | | |

| Day. | Oct. | Nov. | Dec. | Jan. | Mar. | Apr. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | |
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | 53 | | | | |
| 4 | | | | | | | | | |
| 5 | | | | 9.6 | 69 | | | | |
| 6 | | | | | | | | | |
| 7 | 15 | | | 30 | | | | | |
| 8 | | 88 | | | | | | 30 | |
| 9 | | 64 | | | | | | | |
| 10 | | | | | 165 | | | | |
| 11 | | | 17 | | | | | 28 | |
| 12 | | | | | | | | | |
| 13 | | | | | 116 | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | 26 | | | | | | |
| 20 | | | | | | | | | |
| 21 | | 41 | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | 38 | | | | | | | |
| 24 | 18 | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | 16 | | | 47 | | | | | |
| 28 | | | | | | | 182 | | 8.6 |
| 29 | | | | | | 510 | | | |
| 30 | | | | | | 404 | 122 | | |
| 31 | | | | | | | | | |

NOTE.—Discharge determined from a fairly well defined rating curve,

### HUNTER CREEK NEAR TUOLUMNE, CAL.

LOCATION.—In the NW. ¼ NE. ¼ sec. 19, T. 1 N., R. 17 E., in Stanislaus National Forest, at Luke Meadow ford, about 5 miles above junction with North Fork of Tuolumne River, and 6 miles southeast of Tuolumne.

RECORDS AVAILABLE.—September 11, 1910, to September 30, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on left bank, 50 feet above ford.

CHANNEL.—Coarse gravel; slightly shifting.

DISCHARGE MEASUREMENTS.—Made by wading.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

Sufficient discharge measurements have not been made to develop a rating curve for this station.

*Daily gage height, in feet, of Hunter Creek near Tuolumne, Cal., during the year ending Sept. 30, 1913.*

| Date. | Gage height. | Date. | Gage height. | Date. | Gage height. |
|---|---|---|---|---|---|
| Oct. 24 | 0.60 | Mar. 2 | 0.65 | June 5 | 0.49 |
| 27 | .64 | 3 | .64 | 17 | .57 |
| Nov. 14 | .78 | 5 | .62 | 23 | .48 |
| Dec. 11 | .68 | 15 | .60 | 25 | .48 |
| Jan. 10 | .85 | 28 | .82 | July 1 | .51 |
| 11 | .83 | 29 | .92 | 5 | .51 |
| Feb. 2 | .77 | May 29 | .53 | Sept. 2 | .30 |
| Mar. 1 | .64 | June 3 | .51 | 12 | .30 |

### YOSEMITE POWER CO.'S CANAL[1] NEAR LA GRANGE, CAL.

LOCATION.—At the short flume opposite La Grange dam, just above waste gate, about three-fourths mile above power house, and 1¼ miles northeast of La Grange.

RECORDS AVAILABLE.—1908 to September 30, 1913 (not complete).

GAGE.—Depth of water in flume is measured at reference point.

DISCHARGE MEASUREMENTS.—Made in flume near point at which gage heights are observed.

ACCURACY.—Results good.

COOPERATION.—Gage-height record furnished by Turlock irrigation district, through Burton Smith, chief engineer.

The Yosemite Power Co.'s canal takes water from the south side of Tuolumne River in the SW. ¼ sec. 6, T. 2 S., R. 15 E., at Indian Bar, about 15 miles above the town of La Grange. This canal was built in the early days to supply water for hydraulic mining in the vicinity of La Grange, and is now locally known as the La Grange mining ditch. Recently it has been thoroughly repaired and is now used as a supply canal for the new hydroelectric plant which was installed in the latter part of 1907. The power house is about half a mile above the town of La Grange and is below the dam and headworks of the Turlock and Modesto irrigation canals.

[1] Formerly called Lagrange Water & Power Co.'s canal.

*Discharge measurements of Yosemite Power Co.'s canal near La Grange, Cal., during the year ending Sept. 30, 1913.*

[Made by E. C. Murphy.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Mar. 11 | 2.71 | 57 | May 16 | 2.70 | 57 |
| Apr. 25 | 2.70 | 62 | June 15 | 2.69 | 58 |

*Daily gage height, in feet, of Yosemite Power Co.'s canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

[H. T. Sackett, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 2 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 3 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 4 | 2.6 | 2.6 | 2.7 | ..... | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 5 | 2.6 | 2.6 | ..... | ..... | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 6 | 2.6 | 2.7 | 2.7 | ..... | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 7 | 2.6 | 2.6 | 2.7 | ..... | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 8 | 2.7 | 2.6 | ..... | 2.7 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | ..... | ..... |
| 9 | .50 | 2.6 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 10 | 2.6 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | .35 | 2.8 |
| 11 | 2.6 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | ..... | 2.8 | 2.8 |
| 12 | 2.6 | 2.7 | ..... | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 13 | 2.6 | 2.7 | ..... | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 14 | 2.7 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 15 | 2.7 | ..... | 2.7 | 2.6 | 2.7 | 2.7 | 2.4 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 |
| 16 | 2.6 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.4 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 17 | 2.6 | 2.7 | 2.6 | 2.5 | 2.7 | 2.7 | 2.4 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 18 | 2.6 | 2.7 | 2.6 | 2.5 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 19 | 2.6 | 2.7 | 2.7 | 2.5 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 20 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 21 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 22 | 2.6 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 23 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 24 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.0 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 25 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.2 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 26 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.4 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 27 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.4 | 2.7 | 2.7 | 2.7 | ..... | 2.8 | 2.8 |
| 28 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.8 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 29 | 2.7 | 2.7 | 2.7 | 2.6 | ..... | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 |
| 30 | 2.7 | ..... | 2.7 | 2.6 | ..... | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.8 | 2.8 |
| 31 | 2.6 | ..... | 2.7 | 2.7 | ..... | 2.6 | ..... | 2.7 | ..... | 2.8 | 2.8 | ..... |

NOTE.—Water out of canal July 27, 1913.

*Daily discharge, in second-feet, of Yosemite Power Co.'s canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 56 | 56 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 59 | 62 | 62 |
| 2 | 56 | 56 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 59 | 62 | 62 |
| 3 | 56 | 56 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 59 | 62 | 62 |
| 4 | 56 | 56 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 59 | 62 | 62 |
| 5 | 56 | 56 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 6 | 56 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 7 | 56 | 56 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 8 | 59 | 56 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 9 | 6 | 56 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 62 | 62 |
| 10 | 56 | 59 | 59 | 56 | 59 | 59 | 56 | 59 | 59 | 59 | 4 | 62 |
| 11 | 56 | 59 | 59 | 56 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 12 | 56 | 59 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 62 | 62 |
| 13 | 56 | 59 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 62 | 62 |
| 14 | 59 | 59 | 59 | 56 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 |
| 15 | 59 | 59 | 59 | 56 | 59 | 59 | 50 | 59 | 59 | 59 | 62 | 62 |
| 16 | 56 | 59 | 56 | 56 | 59 | 59 | 50 | 59 | 59 | 62 | 62 | 62 |
| 17 | 56 | 59 | 56 | 53 | 59 | 59 | 50 | 59 | 59 | 62 | 62 | 62 |
| 18 | 56 | 59 | 56 | 53 | 59 | 56 | 56 | 59 | 59 | 62 | 62 | 62 |
| 19 | 56 | 59 | 59 | 53 | 59 | 56 | 56 | 59 | 59 | 62 | 62 | 62 |
| 20 | 56 | 56 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 62 | 62 | 62 |
| 21 | 56 | 59 | 59 | 59 | 59 | 56 | 56 | 59 | 59 | 62 | 62 | 62 |
| 22 | 56 | 56 | 59 | 59 | 56 | 56 | 59 | 59 | 59 | 62 | 62 | 62 |
| 23 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 62 | 62 | 62 |
| 24 | 59 | 59 | 59 | 59 | 59 | 38 | 59 | 59 | 59 | 62 | 62 | 62 |
| 25 | 59 | 56 | 59 | 59 | 56 | 44 | 59 | 59 | 59 | 62 | 62 | 62 |
| 26 | 59 | 56 | 59 | 59 | 56 | 50 | 59 | 59 | 59 | 62 | 62 | 62 |
| 27 | 59 | 56 | 59 | 59 | 56 | 50 | 59 | 59 | 59 | 0 | 62 | 62 |
| 28 | 59 | 59 | 59 | 59 | 56 | 62 | 59 | 59 | 59 | 62 | 62 | 62 |
| 29 | 59 | 59 | 59 | 56 | ..... | 56 | 59 | 59 | 59 | 62 | 62 | 62 |
| 30 | 59 | 59 | 59 | 56 | ..... | 56 | 59 | 59 | 59 | 56 | 62 | 62 |
| 31 | 56 | ..... | 59 | 59 | ..... | 56 | ..... | 59 | ..... | 62 | 62 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days for which gage heights are not recorded.

*Monthly discharge of Yosemite Power Co.'s canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 59 | 6 | 55.5 | 3,410 | A. |
| November | 59 | 56 | 57.7 | 3,430 | B. |
| December | 59 | 56 | 58.7 | 3,610 | B. |
| January | 59 | 53 | 57.5 | 3,540 | B. |
| February | 59 | 56 | 58.5 | 3,250 | A. |
| March | 62 | 38 | 56.1 | 3,450 | A. |
| April | 59 | 50 | 56.6 | 3,370 | A. |
| May | 59 | 59 | 59.0 | 3,630 | A. |
| June | 59 | 59 | 59.0 | 3,510 | A. |
| July | 62 | 0 | 58.4 | 3,590 | B. |
| August | 62 | 4 | 60.1 | 3,700 | B. |
| September | 62 | 62 | 62.0 | 3,690 | B. |
| The year | 62 | 0 | 58.2 | 42,200 | |

### MODESTO CANAL NEAR LA GRANGE, CAL.

LOCATION.—In the SE. ¼ sec. 17, T. 3 S., R. 14 E., near intake at La Grange dam, on right bank of Tuolumne River, about 1¼ miles northeast of La Grange.

RECORDS AVAILABLE.—April 26, 1903, to September 30, 1913.

GAGE.—Vertical iron staff in concrete well on left bank, 460 feet below head gates and below waste gates.

DISCHARGE MEASUREMENTS.—Made from footbridge 550 feet below gage. This section of the canal is lined with concrete.

ACCURACY.—Rating curve fairly well defined; results good, Discharge measurements made during 1913 show that there is slightly less discharge for same gage height than in previous years. This appears to be caused by the accumulation of rock débris in the deep cut below gaging section. Above this point the rock, which slides into the canal during the rainy season, is occasionally removed.

*Discharge measurements of Modesto canal near La Grange, Cal., during the year ending Sept. 30, 1913.*

[Made by E. C. Murphy.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Mar. 11 | 2.10 | 306 | May 16 | 4.22 | 712 | June 19 | 1.63 | 198 |
| Apr. 25 | 4.20 | 706 | June 15 | 4.20 | 707 | | | |

*Daily gage height, in feet, of Modesto canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

[J. W. Johnson, observer.]

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.05 | 2.5 | 1.05 | 3.8 | 4.2 | 4.2 | 4.2 | 2.1 | 1.30 |
| 2 | 1.00 | 1.10 | 2.6 | 1.02 | 4.0 | 4.2 | 4.2 | 4.2 | 1.75 | 2.3 |
| 3 | 1.20 | 1.15 | 2.8 | 1.00 | 4.2 | 4.2 | 4.2 | 4.0 | 1.6 | 3.2 |
| 4 | 1.40 | 1.10 | 3.0 | 1.05 | 4.2 | 4.2 | 4.2 | 3.8 | 1.5 | 3.2 |
| 5 | ..... | 1.10 | 3.0 | 1.8 | 4.2 | 4.2 | 4.2 | 3.2 | 1.38 | 3.0 |
| 6 | ..... | 1.02 | 1.85 | 2.8 | 4.3 | 4.2 | 4.2 | 2.6 | 1.25 | 2.6 |
| 7 | ..... | .72 | 1.45 | 3.4 | 4.2 | 4.2 | 4.2 | 2.6 | 1.12 | 2.3 |
| 8 | ..... | .55 | 1.35 | 2.2 | 4.0 | 4.2 | 4.2 | 2.7 | 1.02 | 2.0 |
| 9 | ..... | .90 | 1.40 | 1.8 | 4.0 | 3.7 | 4.2 | 2.5 | .98 | 1.85 |
| 10 | ..... | 1.02 | 1.38 | 2.0 | 4.2 | 4.2 | 4.2 | 2.2 | .98 | 1.8 |
| 11 | 1.05 | 1.05 | ..... | 2.1 | 4.2 | 4.2 | 4.2 | 2.1 | 1.02 | 1.6 |
| 12 | .98 | 1.00 | ..... | 2.0 | 4.2 | 4.2 | 4.2 | 1.9 | 1.20 | 1.45 |
| 13 | .92 | 1.00 | 1.7 | 1.8 | 4.2 | 4.2 | 4.2 | 1.75 | .99 | 1.32 |
| 14 | .90 | 1.08 | 1.6 | 1.7 | 4.2 | 4.2 | 4.2 | 1.7 | .86 | 1.22 |
| 15 | .92 | 1.40 | 1.55 | 1.6 | 4.2 | 4.2 | 4.2 | 1.55 | .78 | ..... |
| 16 | 1.00 | 1.7 | 1.5 | 1.48 | 4.2 | 4.2 | 4.2 | 1.42 | .72 | ..... |
| 17 | 1.10 | 2.0 | 1.7 | 1.45 | 4.1 | 4.2 | 4.2 | 1.28 | .68 | ..... |
| 18 | 1.40 | 2.2 | 1.8 | 1.75 | 4.1 | 4.2 | 4.2 | 1.18 | .64 | ..... |
| 19 | 1.5 | 2.5 | 1.7 | 1.9 | 4.1 | 4.2 | 4.2 | 1.10 | .62 | ..... |
| 20 | 1.5 | 2.7 | 1.40 | 1.9 | 4.1 | 4.2 | 4.2 | 1.20 | .58 | ..... |
| 21 | 1.5 | 2.5 | 1.25 | 1.8 | 4.2 | 4.2 | 4.2 | 1.18 | .15 | ..... |
| 22 | 1.45 | 2.3 | 1.25 | 2.0 | 4.2 | 4.2 | 4.2 | 1.31 | .30 | ..... |
| 23 | 1.28 | 2.4 | 1.12 | 2.2 | 4.2 | 4.2 | 4.2 | 1.38 | .30 | ..... |
| 24 | 1.20 | 2.4 | 1.10 | 2.2 | 4.2 | 4.2 | 4.2 | 2.2 | .30 | ..... |
| 25 | 1.20 | 2.2 | 1.20 | 2.2 | 4.2 | 4.2 | 4.1 | 2.0 | .40 | ..... |
| 26 | 1.18 | 2.2 | 1.18 | 2.0 | 4.2 | 4.2 | 3.8 | 2.6 | .50 | ..... |
| 27 | 1.15 | 2.4 | 1.15 | 1.95 | 4.2 | 4.2 | 4.2 | 3.3 | .25 | ..... |
| 28 | 1.10 | 2.5 | 1.10 | 2.1 | 4.2 | 4.2 | 4.2 | 3.2 | ..... | ..... |
| 29 | 1.10 | 2.5 | ..... | 2.8 | 4.2 | 4.2 | 4.2 | 2.4 | .20 | ..... |
| 30 | 1.10 | 2.4 | ..... | 3.0 | 4.2 | 4.2 | 4.2 | 3.3 | .30 | ..... |
| 31 | 1.05 | 2.4 | ..... | 3.7 | ..... | 4.2 | ..... | 2.5 | .60 | ..... |

NOTE.—No water in canal Oct. 1 to Dec. 1, Dec. 6–9, 1912, and Sept. 15–30, 1913.

*Daily discharge, in second-feet, of Modesto canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 112 | 384 | 112 | 631 | 707 | 707 | 707 | 308 | 156 |
| 2 | 103 | 120 | 403 | 106 | 669 | 707 | 707 | 707 | 242 | 346 |
| 3 | 138 | 129 | 441 | 103 | 707 | 707 | 707 | 669 | 213 | 517 |
| 4 | 175 | 120 | 479 | 112 | 707 | 707 | 707 | 631 | 194 | 517 |
| 5 | 123 | 120 | 479 | 251 | 707 | 707 | 707 | 517 | 171 | 479 |
| 6 | 0 | 106 | 260 | 441 | 726 | 707 | 707 | 403 | 147 | 403 |
| 7 | 0 | 61 | 184 | 555 | 707 | 707 | 707 | 403 | 124 | 346 |
| 8 | 0 | 39 | 166 | 327 | 669 | 707 | 707 | 422 | 106 | 289 |
| 9 | 0 | 87 | 175 | 251 | 669 | 612 | 707 | 384 | 100 | 260 |
| 10 | 91 | 106 | 171 | 289 | 707 | 707 | 707 | 327 | 100 | 251 |
| 11 | 112 | 112 | 21 | 308 | 707 | 707 | 707 | 308 | 106 | 213 |
| 12 | 100 | 103 | 181 | 289 | 707 | 707 | 707 | 270 | 138 | 184 |
| 13 | 90 | 103 | 232 | 251 | 707 | 707 | 707 | 242 | 101 | 160 |
| 14 | 87 | 117 | 213 | 232 | 707 | 707 | 707 | 232 | 81 | 142 |
| 15 | 90 | 175 | 204 | 213 | 707 | 707 | 707 | 204 | 69 | ..... |
| 16 | 103 | 232 | 194 | 190 | 707 | 707 | 707 | 179 | 61 | ..... |
| 17 | 120 | 289 | 232 | 184 | 688 | 707 | 707 | 152 | 55 | ..... |
| 18 | 175 | 327 | 251 | 242 | 688 | 707 | 707 | 134 | 50 | ..... |
| 19 | 194 | 384 | 232 | 270 | 688 | 707 | 707 | 120 | 48 | ..... |
| 20 | 194 | 422 | 175 | 270 | 688 | 707 | 707 | 138 | 43 | ..... |
| 21 | 194 | 384 | 147 | 251 | 707 | 707 | 707 | 134 | 5 | ..... |
| 22 | 184 | 346 | 147 | 289 | 707 | 707 | 707 | 158 | 14 | ..... |
| 23 | 152 | 365 | 124 | 327 | 707 | 707 | 707 | 171 | 14 | ..... |
| 24 | 138 | 365 | 120 | 327 | 707 | 707 | 707 | 327 | 14 | ..... |
| 25 | 138 | 327 | 138 | 327 | 707 | 707 | 688 | 289 | 22 | ..... |
| 26 | 134 | 327 | 134 | 289 | 707 | 707 | 631 | 403 | 33 | ..... |
| 27 | 129 | 365 | 129 | 280 | 707 | 707 | 707 | 536 | 10 | ..... |
| 28 | 120 | 384 | 120 | 308 | 707 | 707 | 707 | 517 | 0 | ..... |
| 29 | 120 | 384 | ..... | 441 | 707 | 707 | 707 | 365 | 7 | ..... |
| 30 | 120 | 365 | ..... | 479 | 707 | 707 | 707 | 536 | 14 | ..... |
| 31 | 112 | 365 | ..... | 612 | ..... | 707 | ..... | 384 | 45 | ..... |

NOTE.—Discharge estimated Dec. 5 and 10 and Feb. 11 and 12.

*Monthly discharge of Modesto canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 194 | 0 | 111 | 6,820 | B. |
| January | 422 | 39 | 234 | 14,400 | A. |
| February | 479 | 21 | 219 | 12,200 | B. |
| March | 612 | 103 | 288 | 17,700 | A. |
| April | 726 | 631 | 699 | 41,600 | B. |
| May | 707 | 612 | 704 | 43,300 | B. |
| June | 707 | 631 | 704 | 41,900 | B. |
| July | 707 | 120 | 354 | 21,800 | B. |
| August | 308 | 0 | 85.0 | 5,230 | B. |
| September | 517 | 0 | 142 | 8,450 | B. |
| The year | 726 | 0 | 295 | 213,000 | |

### TURLOCK CANAL NEAR LA GRANGE, CAL.

LOCATION.—Below tunnel on left bank of Tuolumne River at La Grange Dam, about 1¼ miles northeast of La Grange.

RECORDS AVAILABLE.—July, 1899, to September 30, 1913.

GAGE.—Vertical staff float in concrete well, 190 feet below intake and below the spillway. April, 1913, a float gage for referencing discharge measurements was installed in flume.

DISCHARGE MEASUREMENTS.—Made from footbridge at Morgan flume, half a mile below gage.

ACCURACY.—Results good.

COOPERATION.—Gage-height record furnished by Turlock irrigation district through Burton Smith, chief engineer.

*Discharge measurements of Turlock canal near La Grange, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 11 | E. C. Murphy | 4.53 | 634 | June 19 | E. C. Murphy | 6.85 | 1,090 |
| Apr. 25 | do | 6.82 | 1,110 | 19 | J. T. Kingdon | 6.84 | 1,100 |
| 25 | do | 6.80 | 1,090 | 19 | E. C. Murphy | 5.34 | 767 |
| May 16 | do | 7.01 | 1,090 | 19 | J. T. Kingdon | 5.35 | 790 |
| 16 | do | 7.06 | 1,130 | 19 | do | 3.91 | 511 |
| June 15 | do | 7.02 | 1,110 | | | | |

*Daily gage height, in feet, of Turlock canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

[H. T. Sackett, observer.]

| Day. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|
| 1 | ..... | 2.2 | 6.1 | 6.6 | 7.0 | 6.6 | 4.7 |
| 2 | ..... | 2.2 | 6.1 | 6.4 | 7.0 | 3.4 | 3.9 |
| 3 | ..... | 2.2 | 6.2 | 6.2 | 7.0 | 5.8 | 3.6 |
| 4 | ..... | 2.2 | 6.2 | 6.6 | 7.0 | 5.8 | 3.2 |
| 5 | ..... | 2.4 | 6.0 | 6.9 | 7.1 | 5.4 | 3.0 |
| 6 | 2.0 | ..... | 6.4 | 6.8 | 7.1 | 5.8 | 2.8 |
| 7 | 2.4 | 2.6 | 6.2 | 7.0 | 7.1 | 5.8 | 2.4 |
| 8 | 2.4 | 3.6 | 6.0 | 7.0 | 7.0 | 5.8 | 2.2 |
| 9 | 2.4 | 3.8 | 5.8 | 7.0 | 7.0 | 5.6 | 2.1 |
| 10 | 2.4 | 4.3 | 6.0 | 7.0 | 7.0 | 5.0 | 1.95 |
| 11 | 2.4 | 4.6 | 6.4 | 7.0 | 6.9 | 4.6 | 2.2 |
| 12 | 2.4 | 4.6 | 6.6 | 7.0 | 7.0 | 4.2 | 2.8 |
| 13 | 2.4 | 4.0 | 6.6 | 7.0 | 6.9 | 3.8 | 2.2 |
| 14 | 2.4 | 3.8 | 6.6 | 7.0 | 7.0 | 3.6 | 1.85 |
| 15 | 2.8 | 3.4 | 6.6 | 7.0 | 7.0 | 3.4 | 1.55 |
| 16 | 2.9 | 3.2 | 6.4 | 7.0 | 7.0 | 3.1 | 1.4 |
| 17 | 3.0 | 3.2 | 6.2 | 7.0 | 7.0 | 2.8 | 1.25 |
| 18 | 3.4 | 3.6 | 6.2 | 7.0 | 6.9 | 2.6 | 1.15 |
| 19 | 3.5 | 4.0 | 6.2 | 7.0 | 6.9 | 2.4 | 1.1 |
| 20 | 3.1 | 4.2 | 6.0 | 7.0 | 6.7 | 2.5 | 1.0 |
| 21 | 2.7 | 3.9 | 6.2 | 7.0 | 6.8 | 2.4 | 1.0 |
| 22 | 2.7 | 3.8 | 6.2 | 7.0 | 6.7 | 2.7 | 1.05 |
| 23 | 2.5 | 4.8 | 6.5 | 7.0 | 6.8 | 3.0 | 1.0 |
| 24 | 2.3 | 4.6 | 6.8 | 7.0 | 6.3 | 4.6 | 1.2 |
| 25 | 2.5 | 4.6 | 6.8 | 7.0 | 6.6 | 4.5 | 1.4 |
| 26 | 2.5 | 4.2 | 6.8 | 7.0 | 5.9 | 5.1 | 2.8 |
| 27 | 2.4 | 4.0 | 6.8 | 7.0 | 7.0 | 5.6 | 3.2 |
| 28 | 2.4 | 4.3 | 6.8 | 6.9 | 6.9 | 6.0 | 3.8 |
| 29 | ..... | 4.8 | 6.9 | 6.9 | 6.6 | 5.3 | 5.5 |
| 30 | ..... | 5.3 | 6.8 | 7.0 | 6.6 | 6.3 | 5.6 |
| 31 | ..... | 5.8 | ..... | 6.9 | ..... | 5.7 | 6.0 |

NOTE.—No water in canal Oct. 1, 1912, to Feb. 5, 1913, Mar. 6 and Sept. 1–30, 1913.

*Daily discharge, in second-feet, of Turlock canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Day. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 230 | 939 | 1,040 | 1,120 | 1,040 | 663 |
| 2 | 0 | 230 | 939 | 999 | 1,120 | 424 | 512 |
| 3 | 0 | 230 | 959 | 959 | 1,120 | 879 | 458 |
| 4 | 0 | 230 | 959 | 1,040 | 1,120 | 879 | 390 |
| 5 | 0 | 260 | 919 | 1,100 | 1,140 | 799 | 356 |
| 6 | 202 | 0 | 999 | 1,080 | 1,140 | 879 | 322 |
| 7 | 260 | 290 | 959 | 1,120 | 1,140 | 879 | 260 |
| 8 | 260 | 458 | 919 | 1,120 | 1,120 | 879 | 230 |
| 9 | 260 | 494 | 879 | 1,120 | 1,120 | 839 | 216 |
| 10 | 260 | 587 | 919 | 1,120 | 1,120 | 720 | 196 |
| 11 | 260 | 644 | 999 | 1,120 | 1,100 | 644 | 230 |
| 12 | 260 | 644 | 1,040 | 1,120 | 1,120 | 568 | 322 |
| 13 | 260 | 530 | 1,040 | 1,120 | 1,100 | 494 | 230 |
| 14 | 260 | 494 | 1,040 | 1,120 | 1,120 | 458 | 183 |
| 15 | 322 | 424 | 1,040 | 1,120 | 1,120 | 424 | 147 |
| 16 | 339 | 390 | 999 | 1,120 | 1,120 | 373 | 129 |
| 17 | 356 | 390 | 959 | 1,120 | 1,120 | 322 | 112 |
| 18 | 424 | 458 | 959 | 1,120 | 1,100 | 290 | 100 |
| 19 | 441 | 530 | 959 | 1,120 | 1,100 | 260 | 95 |
| 20 | 373 | 568 | 919 | 1,120 | 1,060 | 275 | 85 |
| 21 | 306 | 512 | 959 | 1,120 | 1,080 | 260 | 85 |
| 22 | 306 | 494 | 959 | 1,120 | 1,060 | 306 | 90 |
| 23 | 275 | 682 | 1,020 | 1,120 | 1,080 | 356 | 85 |
| 24 | 245 | 644 | 1,080 | 1,120 | 979 | 644 | 106 |
| 25 | 275 | 644 | 1,080 | 1,120 | 1,040 | 625 | 129 |
| 26 | 275 | 568 | 1,080 | 1,120 | 899 | 739 | 322 |
| 27 | 260 | 530 | 1,080 | 1,120 | 1,120 | 839 | 390 |
| 28 | 260 | 587 | 1,080 | 1,100 | 1,100 | 919 | 494 |
| 29 | ..... | 682 | 1,100 | 1,100 | 1,040 | 779 | 819 |
| 30 | ..... | 779 | 1,080 | 1,120 | 1,040 | 979 | 839 |
| 31 | ..... | 879 | ..... | 1,100 | ..... | 859 | 919 |

NOTE.—Discharge determimed from a well-defined rating curve.

*Monthly discharge of Turlock canal near La Grange, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 0 | 0 | 0 | 0 | |
| January | 0 | 0 | 0 | 0 | |
| February | 441 | 0 | 241 | 13,400 | A. |
| March | 879 | 0 | 487 | 29,900 | A. |
| April | 1,100 | 879 | 995 | 59,200 | A. |
| May | 1,120 | 959 | 1,100 | 67,600 | A. |
| June | 1,140 | 899 | 1,090 | 64,900 | A. |
| July | 1,040 | 260 | 633 | 38,900 | A. |
| August | 919 | 85 | 307 | 18,900 | A. |
| September | 0 | 0 | 0 | 0 | |
| The year | 1,140 | 0 | 405 | 293,000 | |

## STANISLAUS RIVER AND TRIBUTARIES.

### MIDDLE FORK OF STANISLAUS RIVER NEAR AVERY, CAL.

LOCATION.—At diversion dam of Sierra & San Francisco Power Co., at Sand Bar Flat, about 3 miles below Bakers Crossing, 11 miles above junction with North Fork of Stanislaus River, and 11 miles southeast of Avery.

RECORDS AVAILABLE.—September 1, 1905, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff showing depth of water over crest of dam. There is also a staff in flume below dam.

DISCHARGE.—Flow over dam is computed from formula developed by company. Current-meter measurements are made in flume. Discharge as published is combined flow of river over dam and discharge of flume.

STORAGE.—Relief reservoir, on Relief Creek about 1 mile above mouth, has a capacity of 16,000 acre-feet.

COOPERATION.—Record furnished by Sierra & San Francisco Power Co., through H. F. Jackson, general manager.

*Daily discharge, in second-feet, of Middle Fork of Stanislaus River near Avery, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 205 | 193 | 94 | 84 | 109 | 97 | 793 | 633 | 1,370 | 488 | 268 | 281 |
| 2 | 192 | 101 | 82 | 78 | 110 | 104 | 737 | 646 | 1,370 | 488 | 240 | 245 |
| 3 | 178 | 85 | 75 | 78 | 107 | 107 | 479 | 669 | 1,540 | 467 | 239 | 173 |
| 4 | 173 | 86 | 86 | 78 | 104 | 111 | 444 | 909 | 1,500 | 443 | 225 | 146 |
| 5 | 184 | 84 | 74 | 57 | 102 | 121 | 586 | 1,170 | 1,590 | 433 | 206 | 174 |
| 6 | 200 | 98 | 67 | 57 | 103 | 146 | 528 | 1,360 | 1,460 | 457 | 190 | 210 |
| 7 | 200 | 357 | 90 | 64 | 104 | 172 | 458 | 1,440 | 1,590 | 453 | 203 | 219 |
| 8 | 198 | 189 | 81 | 66 | 106 | 189 | 444 | 1,350 | 1,510 | 433 | 218 | 215 |
| 9 | 196 | 52 | 77 | 84 | 108 | 207 | 513 | 1,450 | 1,280 | 408 | 251 | 201 |
| 10 | 193 | 182 | 67 | 90 | 112 | 241 | 646 | 1,350 | 1,110 | 374 | 176 | 206 |
| 11 | 190 | 149 | 73 | 81 | 116 | 260 | 801 | 1,260 | 926 | 335 | 196 | 209 |
| 12 | 188 | 141 | 84 | 75 | 117 | 218 | 877 | 1,120 | 958 | 328 | 214 | 219 |
| 13 | 188 | 140 | 80 | 81 | 120 | 202 | 901 | 997 | 1,100 | 304 | 198 | 211 |
| 14 | 187 | 128 | 76 | 84 | 123 | 184 | 683 | 1,070 | 1,200 | 260 | 172 | 206 |
| 15 | 185 | 124 | 91 | 91 | 135 | 178 | 529 | 1,280 | 1,210 | 242 | 185 | 204 |
| 16 | 183 | 113 | 82 | 80 | 152 | 182 | 499 | 1,500 | 1,140 | 236 | 190 | 201 |
| 17 | 185 | 114 | 89 | 65 | 165 | 195 | 497 | 1,710 | 1,040 | 229 | 202 | 202 |
| 18 | 189 | 117 | 87 | 70 | 164 | 206 | 499 | 1,920 | 967 | 218 | 199 | 210 |
| 19 | 194 | 108 | 80 | 75 | 146 | 204 | 479 | 1,430 | 839 | 223 | 195 | 216 |
| 20 | 202 | 122 | 79 | 80 | 131 | 193 | 536 | 1,340 | 730 | 218 | 189 | 217 |
| 21 | 202 | 106 | 73 | 78 | 122 | 184 | 572 | 1,300 | 754 | 226 | 190 | 218 |
| 22 | 212 | 101 | 64 | 85 | 128 | 193 | 808 | 1,450 | 640 | 247 | 201 | 215 |
| 23 | 221 | 103 | 83 | 86 | 113 | 175 | 891 | 1,580 | 550 | 339 | 212 | 214 |
| 24 | 219 | 102 | 81 | 80 | 124 | 180 | 951 | 1,560 | 577 | 331 | 348 | 202 |
| 25 | 214 | 98 | 81 | 82 | 117 | 173 | 1,180 | 1,540 | 493 | 410 | 216 | 202 |
| 26 | 215 | 96 | 88 | 87 | 118 | 170 | 1,400 | 1,560 | 474 | 409 | 193 | 209 |
| 27 | 215 | 96 | 94 | 91 | 108 | 183 | 1,510 | 1,720 | 489 | 417 | 287 | 214 |
| 28 | 216 | 98 | 70 | 91 | 106 | 210 | 1,170 | 1,810 | 494 | 378 | 349 | 212 |
| 29 | 216 | 98 | 81 | 93 | ..... | 259 | 1,050 | 1,410 | 464 | 348 | 207 | 211 |
| 30 | 214 | 98 | 82 | 97 | ..... | 364 | 784 | 1,400 | 458 | 327 | 262 | 208 |
| 31 | 201 | ..... | 83 | 101 | ..... | 544 | ..... | 1,410 | ..... | 294 | 404 | ..... |

NOTE.—Discharge interpolated by engineers of the U. S. Geological Survey, Jan. 18 and 19, Apr. 25, and May 15–17.

*Monthly discharge of Middle Fork of Stanislaus River near Avery, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 221 | 173 | 199 | 12,200 |
| November | 357 | 52 | 123 | 7,320 |
| December | 94 | 64 | 80.5 | 4.950 |
| January | 101 | 57 | 80.3 | 4,940 |
| February | 165 | 102 | 120 | 6,660 |
| March | 544 | 97 | 198 | 12,200 |
| April | 1,510 | 444 | 742 | 44,200 |
| May | 1,920 | 635 | 1,330 | 81,800 |
| June | 1,590 | 458 | 994. | 59,100 |
| July | 488 | 218 | 347 | 21,300 |
| August | 404 | 172 | 227 | 14,000 |
| September | 281 | 146 | 209 | 12,400 |
| The year | 1,920 | 52 | 389 | 281,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### STANISLAUS RIVER AT KNIGHTS FERRY, CAL.

LOCATION.—In the NE. ¼ sec. 29, T. 1 S., R. 12 E., at Knights Ferry, about 25 miles below mouth of South Fork and 12 miles northeast of Oakdale.

RECORDS AVAILABLE.—May 19, 1903, to September 30, 1913. From May 3, 1895, to February 16, 1901, a station was maintained one-half mile north of Oakdale.

DRAINAGE AREA.—935 square miles.

GAGE.—Staff in five sections on right bank. Although several changes have been made in the gage, original datum has been maintained. Zero of gage is 157.53 feet above sea level, United States Geological Survey datum.

CHANNEL.—Small bowlders and gravel; slightly shifting at high stages.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet above gage, or by wading.

STORAGE AND DIVERSIONS.—Ditches diverting water for use in mining are numerous above station. Water is also diverted from the South Fork into the Tuolumne Basin, and from the North Fork for use in the vicinity of Murphy and Angeles. Water is stored for power development at Relief reservoir, on Middle Fork of Stanislaus River. Goodwin dam, 4 miles above Knights Ferry, was completed in December, 1912, by the South San Joaquin and Oakdale irrigation districts. Two canals, the South San Joaquin on the right bank and the Oakdale on the left bank, divert water at this dam for irrigation. No complete record of these diversions was obtained during the season of 1913. The Stanislaus and San Joaquin Water Co.'s canal was not in operation.

ACCURACY.—Results affected by the many diversions for irrigation and mining, and by the occasional operation of a power plant a short distance above the gage. Record considered good.

*Discharge measurements of Stanislaus River at Knights Ferry, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 20 | R. C. Rice | 5.56 | 275 | Apr. 23 | E. C. Murphy | 7.88 | 2,220 |
| 20 | do | 5.51 | 258 | June 13 | do | 6.86 | 1,210 |
| Mar. 9 | E. C. Murphy | 6.00 | 526 | Aug. 23 | Lasley Lee | 4.49 | 14 |

*Daily gage height, in feet, of Stanislaus River at Knights Ferry, Cal., for the year ending Sept. 30, 1913.*

[E. J. Coop, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.40 | 5.35 | 5.22 | 5.24 | 5.50 | 5.52 | 7.4 | 7.4 | 8.0 | 5.91 | 5.15 | 4.58 |
| 2 | 5.40 | 5.45 | 5.30 | 5.20 | 5.58 | 5.45 | 7.6 | 7.3 | 8.1 | 5.80 | 5.10 | 4.87 |
| 3 | 5.40 | 5.35 | ..... | 5.20 | 5.59 | 5.41 | 7.1 | 7.4 | 7.9 | 5.81 | 4.85 | 4.78 |
| 4 | 5.39 | 5.35 | ..... | 5.17 | 5.50 | 5.42 | 7.4 | 7.8 | 8.0 | 5.76 | 4.80 | 4.58 |
| 5 | 5.38 | 5.37 | ..... | 5.11 | 5.50 | 5.42 | 7.1 | 8.3 | 8.2 | 5.62 | 4.72 | 4.56 |
| 6 | 5.32 | 5.20 | 5.12 | 5.05 | 5.46 | 5.65 | 7.2 | 8.7 | 8.8 | 5.70 | 4.50 | 4.47 |
| 7 | 5.43 | 5.15 | 5.12 | 5.00 | 5.46 | 5.65 | 6.95 | 9.0 | 8.6 | 5.62 | 4.20 | 4.46 |
| 8 | 5.42 | 5.95 | 5.10 | 5.00 | 5.54 | 5.84 | 6.7 | 9.2 | 7.9 | 5.62 | ..... | 4.49 |
| 9 | 5.36 | 5.65 | 5.11 | 5.08 | 5.52 | 5.92 | 6.9 | 8.8 | 7.7 | 5.59 | ..... | 4.50 |
| 10 | 5.34 | 5.64 | 5.11 | 5.10 | 5.60 | 5.94 | 7.2 | 9.4 | 7.6 | 5.48 | 4.40 | 4.49 |
| 11 | 5.36 | 5.90 | 5.15 | 5.08 | 5.55 | 6.05 | 7.6 | 8.8 | 7.4 | 5.54 | 4.40 | 4.48 |
| 12 | 5.35 | 5.57 | 5.12 | 5.18 | 5.40 | 6.05 | 7.8 | 8.2 | 7.2 | 5.18 | 4.38 | 4.48 |
| 13 | 5.34 | 5.52 | 5.11 | 5.22 | 5.60 | 5.96 | 7.8 | 8.0 | 7.2 | 5.09 | 4.38 | 4.50 |
| 14 | 5.35 | 5.58 | 5.14 | 6.15 | 5.58 | 5.92 | 7.6 | 8.0 | 7.3 | 5.10 | 4.37 | 4.50 |
| 15 | 5.33 | 5.40 | 5.30 | 6.3 | 5.64 | 5.84 | 7.3 | 8.1 | 7.2 | 5.00 | 4.37 | 4.50 |
| 16 | 5.34 | 5.42 | 5.34 | 6.5 | 5.72 | 5.85 | 7.0 | 8.3 | 7.2 | 4.84 | 4.37 | 4.50 |
| 17 | 5.34 | 5.38 | 5.38 | 6.45 | 5.82 | 5.86 | 6.9 | 8.6 | 7.0 | 4.82 | 4.36 | 4.50 |
| 18 | 5.36 | 5.38 | 5.20 | 6.0 | 5.80 | 6.0 | 6.95 | 9.5 | 6.9 | 4.70 | 4.35 | 4.49 |
| 19 | 5.36 | 5.42 | 5.22 | 6.4 | 5.78 | 5.96 | 6.85 | 9.4 | 6.6 | 4.58 | 4.35 | 4.48 |
| 20 | 5.36 | 5.40 | 5.16 | 5.89 | 5.76 | 5.96 | 6.85 | 8.5 | 6.45 | 4.45 | ..... | 4.48 |
| 21 | 5.35 | 5.38 | 5.15 | 5.69 | 5.64 | 5.98 | 7.3 | 8.4 | 6.15 | 4.50 | ..... | 4.50 |
| 22 | 5.45 | 5.35 | 5.08 | 5.50 | 5.52 | 5.95 | 7.5 | 8.5 | 6.1 | 4.45 | ..... | 4.50 |
| 23 | 5.58 | 5.30 | 5.10 | 5.48 | 5.54 | 6.0 | 7.8 | 8.7 | 6.05 | 4.70 | 4.49 | 4.50 |
| 24 | 5.58 | 5.27 | 5.08 | 5.52 | 5.68 | 5.95 | 8.0 | 8.8 | 6.0 | 4.82 | 4.48 | 4.50 |
| 25 | 5.44 | 5.30 | 5.12 | 5.42 | 5.58 | 6.0 | 8.5 | 8.7 | 5.94 | 5.06 | 4.48 | 4.50 |
| 26 | 5.40 | 5.26 | 5.11 | 5.39 | 5.56 | 5.95 | 9.1 | 8.5 | 5.82 | 5.47 | 4.48 | 4.50 |
| 27 | 5.44 | 5.26 | 5.10 | 5.38 | 5.56 | 5.90 | 9.5 | 8.6 | 5.99 | 5.60 | 4.49 | 4.50 |
| 28 | 5.39 | 5.24 | 5.18 | 5.39 | 5.50 | 5.98 | 8.4 | 8.8 | 5.96 | 5.72 | 4.78 | 4.50 |
| 29 | 5.40 | 5.20 | 5.11 | 5.40 | ..... | 6.05 | 8.2 | 8.6 | 6.0 | 5.15 | 4.58 | 4.50 |
| 30 | 5.42 | 5.22 | 5.18 | 5.42 | ..... | 5.60 | 7.8 | 8.1 | 5.89 | 5.40 | 4.74 | 4.50 |
| 31 | 5.43 | ..... | 5.21 | 5.48 | ..... | 6.95 | ..... | 8.1 | ..... | 5.12 | 4.58 | ..... |

NOTE.—No flow Dec. 3–5, 1912, as water was being stored above new dam.
Observer recorded during July, 1913, that most of the water was in the canals and that at times during the day all of it was in the canals, as none ran over the dam. This condition probably was true for August and September.

*Daily discharge, in second-feet, of Stanislaus River at Knights Ferry, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 219 | 202 | 159 | 166 | 256 | 265 | 1,700 | 1,700 | 2,360 | 466 | 139 | 23 |
| 2 | 219 | 238 | 185 | 153 | 291 | 238 | 1,900 | 1,600 | 2,470 | 405 | 125 | 72 |
| 3 | 219 | 202 | 0 | 153 | 296 | 223 | 1,400 | 1,700 | 2,240 | 410 | 68 | 54 |
| 4 | 216 | 202 | 0 | 145 | 256 | 226 | 1,700 | 2,120 | 2,360 | 383 | 58 | 23 |
| 5 | 212 | 209 | 0 | 128 | 256 | 226 | 1,400 | 2,710 | 2,590 | 310 | 44 | 21 |
| 6 | 192 | 153 | 131 | 112 | 241 | 325 | 1,500 | 3,230 | 3,370 | 350 | 15 | 13 |
| 7 | 230 | 139 | 131 | 100 | 241 | 325 | 1,260 | 3,650 | 3,090 | 310 | 1 | 12 |
| 8 | 226 | 490 | 125 | 100 | 274 | 427 | 1,040 | 3,930 | 2,240 | 310 | .5 | 14 |
| 9 | 205 | 325 | 128 | 120 | 265 | 472 | 1,210 | 3,370 | 2,020 | 296 | .5 | 15 |
| 10 | 199 | 320 | 128 | 125 | 300 | 484 | 1,500 | 4,230 | 1,900 | 249 | 8 | 14 |
| 11 | 205 | 460 | 139 | 120 | 278 | 552 | 1,900 | 3,370 | 1,700 | 274 | 8 | 14 |
| 12 | 202 | 287 | 131 | 147 | 219 | 552 | 2,120 | 2,590 | 1,500 | 147 | 7 | 14 |
| 13 | 199 | 265 | 128 | 159 | 300 | 496 | 2,120 | 2,360 | 1,500 | 122 | 7 | 15 |
| 14 | 202 | 291 | 136 | 618 | 291 | 472 | 1,900 | 2,360 | 1,600 | 125 | 6.5 | 15 |
| 15 | 195 | 219 | 185 | 720 | 320 | 427 | 1,600 | 2,470 | 1,500 | 100 | 6.5 | 15 |
| 16 | 199 | 226 | 199 | 870 | 361 | 432 | 1,300 | 2,710 | 1,500 | 66 | 6.5 | 15 |
| 17 | 199 | 212 | 212 | 832 | 416 | 438 | 1,210 | 3,090 | 1,300 | 62 | 6 | 15 |
| 18 | 205 | 212 | 153 | 520 | 405 | 520 | 1,260 | 4,380 | 1,210 | 40 | 5.5 | 14 |
| 19 | 205 | 226 | 159 | 795 | 394 | 496 | 1,160 | 4,230 | 950 | 23 | 5.5 | 14 |
| 20 | 205 | 219 | 142 | 454 | 383 | 496 | 1,160 | 2,960 | 832 | 12 | .5 | 14 |
| 21 | 202 | 212 | 139 | 345 | 320 | 508 | 1,600 | 2,830 | 618 | 15 | .5 | 15 |
| 22 | 238 | 202 | 120 | 256 | 265 | 490 | 1,800 | 2,960 | 585 | 12 | .5 | 15 |
| 23 | 291 | 185 | 125 | 249 | 274 | 520 | 2,120 | 3,230 | 552 | 40 | 14 | 15 |
| 24 | 291 | 175 | 120 | 265 | 340 | 490 | 2,360 | 3,370 | 520 | 62 | 14 | 15 |
| 25 | 234 | 185 | 131 | 226 | 291 | 520 | 2,960 | 3,230 | 484 | 115 | 14 | 15 |
| 26 | 219 | 172 | 128 | 216 | 282 | 490 | 3,790 | 2,960 | 416 | 245 | 14 | 15 |
| 27 | 234 | 172 | 125 | 212 | 282 | 460 | 4,380 | 3,090 | 514 | 300 | 14 | 15 |
| 28 | 216 | 166 | 147 | 216 | 256 | 508 | 2,830 | 3,370 | 496 | 361 | 54 | 15 |
| 29 | 219 | 153 | 128 | 219 | ..... | 552 | 2,590 | 3,090 | 520 | 139 | 23 | 15 |
| 30 | 226 | 159 | 147 | 226 | ..... | 300 | 2,120 | 2,470 | 454 | 219 | 47 | 15 |
| 31 | 230 | ..... | 156 | 249 | ..... | 1,260 | ..... | 2,470 | ..... | 131 | 23 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge Aug. 8, 9, and 20–22, 1913, estimated as 0.5 second-foot as the water surface seems to have been below the lowest graduation on the gage.

*Monthly discharge of Stanislaus River at Knights Ferry, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 291 | 192 | 218 | 13,400 | B. |
| November | 490 | 139 | 229 | 13,600 | B. |
| December | 212 | 0 | 130 | 7,990 | B. |
| January | 870 | 100 | 297 | 18,300 | B. |
| February | 416 | 219 | 298 | 16,600 | B. |
| March | 1,260 | 223 | 458 | 28,200 | A. |
| April | 4,380 | 1,040 | 1,900 | 113,000 | A. |
| May | 4,380 | 1,600 | 2,960 | 182,000 | A. |
| June | 3,370 | 416 | 1,450 | 86,300 | A. |
| July | 466 | 12 | 197 | 12,100 | B. |
| August | 139 | .5 | 23.7 | 1,460 | C. |
| September | 72 | 12 | 18.5 | 1,100 | C. |
| The year | 4,380 | 0 | 682 | 494,000 | |

### RELIEF RESERVOIR NEAR BAKER STATION, CAL.

**Location.**—In sec. 13, T. 5 N., R. 20 E., on Relief Creek, about 3 miles southeast of Baker Station.

**Records available.**—October 1, 1910, to September 30, 1913.

**Drainage area.**—Not measured.

**Cooperation.**—Daily storage in millions of cubic feet furnished by Sierra & San Francisco Power Co., through Mr. H. F. Jackson, general manager. It has been reduced to acre-feet by engineers of United States Geological Survey.

*Daily storage, in acre-feet, of Relief Reservoir near Baker Station, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6,890 | 20 | ..... | 295 | 301 | 309 | 306 | 3,700 | 14,400 | 15,100 | 15,100 | 12,700 |
| 2 | 6,750 | ..... | ..... | 295 | 303 | 309 | 309 | 3,870 | 14,300 | 15,200 | 15,100 | 12,800 |
| 3 | 6,620 | ..... | ..... | 295 | 303 | 309 | 309 | 4,080 | 14,400 | 15,200 | 15,000 | 12,800 |
| 4 | 6,470 | ..... | 255 | 295 | 303 | 306 | 309 | 4,320 | 14,500 | 15,200 | 15,000 | 12,900 |
| 5 | 6,320 | ..... | 262 | 295 | 303 | 303 | 309 | 4,650 | 14,400 | 15,200 | 15,000 | 12,800 |
| 6 | 6,170 | ..... | ..... | 295 | 303 | 301 | 314 | 4,860 | 14,500 | 15,200 | 15,000 | 12,500 |
| 7 | 6,080 | ..... | ..... | 295 | 303 | 301 | 317 | 5,030 | 14,500 | 15,200 | 15,000 | 12,200 |
| 8 | 5,980 | ..... | 264 | 295 | 306 | 301 | 320 | 5,350 | 14,400 | 15,200 | 15,000 | 12,100 |
| 9 | 5,750 | ..... | 260 | 295 | 306 | 301 | 356 | 5,660 | 14,400 | 15,200 | 15,000 | 11,900 |
| 10 | 5,610 | ..... | 260 | 295 | 306 | 301 | 465 | 6,030 | 14,300 | 15,200 | 14,900 | 11,700 |
| 11 | 5,460 | ..... | 295 | 295 | 309 | 301 | 541 | 6,450 | 14,200 | 15,200 | 14,900 | 11,400 |
| 12 | 5,320 | ..... | 295 | 295 | 309 | 303 | 636 | 7,000 | 14,200 | 15,200 | 14,800 | 11,100 |
| 13 | 5,140 | ..... | 295 | 295 | 309 | 303 | 744 | 7,340 | 14,300 | 15,200 | 14,700 | 10,900 |
| 14 | 4,300 | ..... | 293 | 295 | 309 | 306 | 866 | 7,620 | 14,300 | 15,100 | 14,600 | 10,800 |
| 15 | 3,960 | ..... | 295 | 295 | 309 | 306 | 982 | 7,840 | 14,400 | 15,100 | 14,600 | 10,700 |
| 16 | 3,730 | ..... | 295 | 295 | 309 | 309 | 1,100 | 8,280 | 14,300 | 15,100 | 14,500 | 10,500 |
| 17 | 3,470 | ..... | 295 | 295 | 309 | 309 | 1,220 | 8,890 | 14,300 | 15,100 | 14,400 | 10,400 |
| 18 | 2,970 | ..... | 301 | 295 | 309 | 312 | 1,350 | 9,560 | 14,300 | 15,100 | 14,300 | 10,200 |
| 19 | 2,770 | ..... | 303 | 295 | 309 | 312 | 1,460 | 9,990 | 14,300 | 15,100 | 14,200 | 10,000 |
| 20 | 2,590 | ..... | 301 | 295 | 309 | 314 | 1,600 | 10,300 | 14,300 | 15,100 | 14,000 | 9,660 |
| 21 | 2,380 | ..... | ..... | 295 | 309 | 314 | 1,720 | 10,700 | 14,600 | 15,100 | 13,800 | 9,430 |
| 22 | 2,140 | ..... | 298 | 295 | 309 | 314 | 1,900 | 11,300 | 14,600 | 15,100 | 13,500 | 9,210 |
| 23 | 1,910 | ..... | 295 | 295 | 309 | 314 | 2,070 | 12,000 | 14,700 | 15,100 | 13,300 | 8,970 |
| 24 | 1,670 | ..... | 295 | 295 | 309 | 314 | 2,260 | 12,700 | 14,800 | 15,100 | 13,200 | 8,880 |
| 25 | 1,450 | ..... | 290 | 295 | 309 | 314 | 2,500 | 13,300 | 14,900 | 15,100 | 13,100 | 8,510 |
| 26 | 1,280 | ..... | 295 | 295 | 309 | 319 | 2,680 | 14,200 | 15,000 | 15,200 | 13,000 | 8,060 |
| 27 | 1,000 | ..... | 295 | 295 | 309 | 320 | 2,840 | 15,000 | 15,100 | 15,200 | 12,800 | 7,840 |
| 28 | 703 | ..... | 295 | 295 | 309 | 301 | 3,060 | 14,600 | 15,100 | 15,200 | 12,700 | 7,570 |
| 29 | 340 | ..... | 295 | 295 | ..... | 301 | 3,310 | 14,600 | 15,100 | 15,200 | 12,600 | 7,300 |
| 30 | 71 | ..... | 295 | 295 | ..... | 314 | 3,520 | 14,300 | 15,100 | 15,200 | 12,600 | 7,020 |
| 31 | 37 | ..... | 295 | 301 | ..... | 302 | ..... | 14,400 | ..... | 15,200 | 12,700 | ..... |

NOTE.—Reservoir empty Nov. 2 to Dec. 3. No record Dec. 6, 7, and 21.

### RELIEF CREEK NEAR BAKER STATION, CAL.

LOCATION.—In the NW. ¼ sec. 13, T. 5 N., R. 20 E., one-fourth mile below Relief reservoir of the Sierra & San Francisco Power Co., one-fourth mile above junction with East Fork and about 3 miles southeast of Baker Station.

RECORDS AVAILABLE.—October, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

DISCHARGE.—Computed from gage-height record at weir, which gives the combined flow over spillway and through outlet gates of dam.

STORAGE.—See Relief Reservoir.

COOPERATION.—Record furnished by Sierra & San Francisco Power Co. through H. F. Jackson, general manager.

*Daily discharge, in second feet, of Relief Creek near Baker Station, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95 | 4.2 | 11 | 8.4 | 8.4 | 8.4 | 12 | ..... | 260 | 49 | 47 | 7.5 |
| 2 | 90 | 3.4 | 10 | 8.4 | 8.7 | 8.7 | 12 | ..... | 240 | 58 | 41 | 7.5 |
| 3 | 80 | .4 | 6.9 | 8.4 | 8.7 | 8.7 | 28 | ..... | 335 | 64 | 36 | 7.5 |
| 4 | 80 | .4 | 8.4 | 8.1 | 8.7 | 9.4 | 28 | ..... | 310 | 64 | 34 | 25 |
| 5 | 90 | .3 | 9.1 | 8.1 | 8.7 | 9.4 | 28 | ..... | 335 | 64 | 34 | 75 |
| 6 | 90 | 4.7 | 9.1 | 8.1 | 8.7 | 9.7 | 28 | ..... | 285 | 64 | 71 | 85 |
| 7 | 90 | 14 | 9.1 | 8.1 | 8.7 | 9.7 | 28 | ..... | 285 | 64 | 55 | 101 |
| 8 | 90 | 14 | 9.1 | 8.1 | 8.7 | 9.7 | 29 | ..... | 260 | 64 | 55 | 85 |
| 9 | 90 | 12 | 8.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 260 | 67 | 55 | 85 |
| 10 | 90 | 11 | 9.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 200 | 61 | 39 | 101 |
| 11 | 90 | 9.1 | 8.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 116 | 63 | 66 | 101 |
| 12 | 90 | 8.4 | 8.1 | 7.4 | 9.1 | 9.4 | ..... | ..... | 120 | 64 | 38 | 110 |
| 13 | 90 | 8.4 | 8.1 | 7.4 | 9.1 | 9.7 | ..... | ..... | 126 | 62 | 22 | 101 |
| 14 | 90 | 10 | 8.1 | 7.4 | 9.1 | 9.7 | ..... | ..... | 240 | 38 | 50 | 101 |
| 15 | 90 | 11 | 8.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 260 | 38 | 66 | 101 |
| 16 | 90 | 11 | 8.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 240 | 27 | 76 | 101 |
| 17 | 97 | 7.5 | 8.1 | 8.1 | 9.1 | 9.7 | ..... | ..... | 200 | 27 | 76 | 110 |
| 18 | 105 | 8.1 | 8.4 | 8.1 | 9.1 | 9.4 | ..... | ..... | 175 | 27 | 76 | 115 |
| 19 | 110 | 7.5 | 8.4 | 8.1 | 9.1 | 9.4 | ..... | ..... | 175 | 27 | 76 | 115 |
| 20 | 110 | 8.1 | 8.4 | 8.1 | 9.1 | 9.4 | ..... | ..... | 123 | 27 | 76 | 121 |
| 21 | 110 | 8.1 | 8.4 | 8.1 | 9.1 | 9.1 | ..... | ..... | 123 | 27 | 76 | 115 |
| 22 | 125 | 7.5 | 8.4 | 8.1 | 9.1 | 9.1 | ..... | ..... | 67 | 27 | 76 | 106 |
| 23 | 125 | 8.1 | 8.4 | 8.1 | 8.7 | 9.1 | ..... | ..... | 67 | 38 | 76 | 101 |
| 24 | 125 | 7.2 | 8.4 | 8.1 | 8.7 | 9.1 | ..... | ..... | ..... | 27 | 45 | 101 |
| 25 | 125 | 8.4 | 8.4 | 8.1 | 8.7 | 9.1 | ..... | ..... | ..... | 38 | 25 | 106 |
| 26 | 125 | 8.1 | 8.4 | 8.4 | 8.7 | 9.4 | ..... | 4.2 | ..... | 99 | 25 | 110 |
| 27 | 125 | 8.4 | 8.4 | 8.1 | 8.7 | 35 | ..... | 180 | ..... | 101 | 50 | 110 |
| 28 | 121 | 8.1 | 8.4 | 8.1 | 8.4 | 35 | ..... | 335 | ..... | 101 | 25 | 110 |
| 29 | 119 | 11 | 8.4 | 8.1 | ..... | 11 | ..... | 200 | 49 | 37 | 7.5 | 110 |
| 30 | 55 | 10 | 8.4 | 8.1 | ..... | 11 | ..... | 200 | 61 | 37 | 7.5 | 110 |
| 31 | 82 | ..... | 8.4 | 8.4 | ..... | 11 | ..... | 260 | ..... | 38 | 7.5 | ..... |

NOTE.—Discharge Dec. 6, 7, and 21 and Jan. 21–24 interpolated by the U. S. Geological Survey. No flow Apr. 9 to May 25 and June 24–28.

*Monthly discharge of Relief Creek near Baker Station, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 125 | 55 | 99.5 | 6,120 |
| November | 14 | .3 | 7.95 | 473 |
| December | 11 | 6.9 | 8.52 | 524 |
| January | 8.4 | 7.4 | 8.08 | 497 |
| February | 9.1 | 8.4 | 8.88 | 493 |
| March | 35 | 8.4 | 11.2 | 689 |
| April | 29 | 0 | 6.43 | 383 |
| May | 335 | 0 | 38.0 | 2,340 |
| June | 335 | 0 | 164 | 9,760 |
| July | 101 | 27 | 51.2 | 3,150 |
| August | 76 | 7.5 | 48.7 | 2,990 |
| September | 121 | 7.5 | 91.2 | 5,430 |
| The year | 335 | 0 | 45.3 | 32,800 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### ROSE CREEK NEAR JUPITER, CAL.

LOCATION.—In the SE. ¼ sec. 17, T. 3 N., R. 15 E., in the Stanislaus National Forest, just above trail bridge, about 2 miles northwest of Jupiter and about 2¾ miles above junction with Stanislaus River. Eagle Creek enters 1½ miles above and Knight Creek 2½ miles below station.

RECORDS AVAILABLE.—September 8, 1910, to June 28, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a tree on right bank, 100 feet above the bridge.

CHANNEL.—Gravel and small bowlders.

DISCHARGE MEASUREMENTS.—Made by wading. No measurements were made during 1913.

COOPERATION.—Gage-height record furnished by United States Forest Service.

Discharge not estimated on account insufficient data.

*Daily gage height, in feet, of Rose Creek near Jupiter, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | 0.40 | | | | | 0.63 | 0.51 |
| 4 | | | | | | | | .60 | |
| 5 | | | | | | | 1.00 | | |
| 6 | | | | | | 0.90 | | | |
| 7 | | | | | | | | | .45 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | .42 |
| 11 | | | | | | .98 | 1.05 | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | .55 | |
| 14 | | | | | | | | | .37 |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | 1.05 | | .50 | .31 |
| 18 | 0.10 | | | | | | 1.10 | | |
| 19 | | | | | | | | | |
| 20 | | | | | | | | .55 | |
| 21 | | | | 0.65 | | | 1.05 | | .25 |
| 22 | | | | | | | | | |
| 23 | | 0.40 | | .65 | | | | | |
| 24 | | | | | | | | .45 | .21 |
| 25 | .12 | | | | | .95 | .95 | | |
| 26 | | .37 | | | | | | | |
| 27 | | | | | | | | .41 | |
| 28 | | | | | 0.88 | | | | .16 |
| 29 | | | | | | | | | |
| 30 | | .36 | | | | | .9 | | |
| 31 | | | | | | | | .55 | |

### KNIGHT CREEK NEAR JUPITER, CAL.

LOCATION.—In the SE. ¼ sec. 8, T. 3 N., R. 15 E., in the Stanislaus National Forest, at trail ford, about 5 miles west of Jupiter. Knight Creek joins Rose Creek about 2 miles below the station.

RECORDS AVAILABLE.—September 9, 1910, to June 28, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on right bank, 10 feet above trail crossing.

CHANNEL.—Gravel and sand; smooth.
DISCHARGE MEASUREMENTS.—Made by wading.
DIVERSIONS.—A small amount of water is diverted for irrigation above the station.
COOPERATION.—Gage-height record furnished by United States Forest Service.

No discharge measurements made during 1913.
No estimates made owing to lack of data.

*Daily gage height, in feet, of Knight Creek near Jupiter, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | 0.2 | 0.25 | 0.4 | | | | | |
| 3 | | | | | | | | 0.3 | |
| 4 | | | | | | 0.3 | | | |
| 5 | | | | | 0.9 | | 1.4 | | |
| 6 | | .2 | | | | | | | |
| 7 | | | | | | | | | 0.15 |
| 8 | | | | | | | | | |
| 9 | | | .25 | | | | | .45 | |
| 10 | | .2 | | .4 | .9 | .3 | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | .6 | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | .15 |
| 15 | | .2 | .3 | 1.5 | .4 | | | | |
| 16 | | | | | | .3 | | | |
| 17 | 0.1 | | | | | | | .3 | |
| 18 | | | | | | | | | |
| 19 | | | | | | | .3 | | |
| 20 | | .2 | .3 | 1.0 | .3 | .3 | | | |
| 21 | | | | | | | | | .15 |
| 22 | | | | | | | | | |
| 23 | | | | | | | | .2 | |
| 24 | .1 | | | | | | | | |
| 25 | | .2 | .3 | | | | | | |
| 26 | | | | | .3 | | .3 | | |
| 27 | | | | | | | | | |
| 28 | | | | | | | | | .1 |
| 29 | | | | | | | | | |
| 30 | .2 | .25 | .3 | .9 | | 1.6 | | | |
| 31 | | | | | | | | .2 | |

### SOUTH FORK OF STANISLAUS RIVER NEAR CONFIDENCE, CAL.

LOCATION.—In the SE. ¼ sec. 17, T. 4 N., R. 18 E., in Stanislaus National Forest, at the Sonora-Bridgeport State highway bridge at Strawberry, 1½ miles below mouth of Herring Creek, and 15 miles northeast of Confidence.
RECORDS AVAILABLE.—October 20, 1911, to August 10, 1913.
DRAINAGE AREA.—About 54 square miles.
GAGE.—Vertical staff on left bank at bridge.
CHANNEL.—Gravel and bowlders.
DISCHARGE MEASUREMENTS.—Made from bridge or by wading.
WINTER FLOW.—Discharge relation not appreciably affected by ice.
STORAGE.—Three storage reservoirs have been built above the station to supply Tuolumne and Sonora with water for domestic use. This water is diverted about 10 miles below the station. Flow is partially regulated by storage.
ACCURACY.—Rating curve well defined; results good.
COOPERATION.—Station maintained in cooperation with Sierra & San Francisco Power Co., through H. F. Jackson, general manager.

No discharge measurements made during the year.

*Daily gage height, in feet, of South Fork of Stanislaus River near Confidence, Cal., for the year ending Sept. 30, 1913.*

[Roland Kimball and L. P. Brady, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.3 | 1.2 | 1.35 | 1.45 | 1.68 | 1.55 | 1.9 | 2.8 | 3.3 | 2.0 | 1.9 |
| 2 | 1.3 | 1.15 | 1.35 | 1.45 | 1.7 | 1.5 | 1.85 | 2.7 | 3.3 | 2.0 | 1.9 |
| 3 | 1.3 | 1.15 | 1.35 | 1.42 | 2.8 | 1.5 | 1.8 | 2.7 | 3.3 | 2.05 | 1.9 |
| 4 | 1.3 | 1.2 | 1.35 | 1.40 | 2.6 | 1.55 | 1.88 | 2.8 | 3.4 | 2.0 | 1.85 |
| 5 | 1.3 | 1.3 | 1.3 | 1.35 | 2.65 | 1.62 | 1.9 | 3.1 | 3.35 | 2.05 | 1.9 |
| 6 | 1.3 | 1.8 | 1.3 | 1.4 | 2.5 | 1.65 | 1.9 | 3.15 | 3.6 | 2.0 | 1.9 |
| 7 | 1.3 | 2.15 | 1.3 | 1.4 | 2.1 | 1.65 | 1.9 | 3.65 | 3.6 | 2.0 | 1.9 |
| 8 | 1.3 | 2.1 | 1.3 | 1.4 | 2.05 | 1.85 | 1.9 | 3.5 | 3.6 | 2.0 | 1.9 |
| 9 | 1.3 | 1.8 | 1.3 | 1.4 | 2.1 | 1.8 | 1.95 | 3.5 | 3.4 | 2.0 | 1.9 |
| 10 | 1.3 | 1.6 | 1.9 | 1.4 | 1.65 | 1.8 | 2.2 | 3.35 | 3.3 | 2.0 | 1.8 |
| 11 | 1.3 | 1.5 | 1.78 | 1.4 | 1.65 | 1.8 | 2.4 | 3.3 | 3.0 | 2.0 | ..... |
| 12 | 1.3 | 1.55 | 1.75 | 1.4 | 1.65 | 1.8 | 2.5 | 3.15 | 2.75 | 2.0 | ..... |
| 13 | 1.3 | 1.52 | 1.72 | 1.4 | 1.65 | 1.8 | 2.5 | 3.0 | 2.9 | 1.95 | ..... |
| 14 | 1.3 | 1.42 | 1.7 | 1.35 | 1.7 | 1.8 | 2.3 | 3.1 | 2.95 | 2.0 | ..... |
| 15 | 1.3 | 1.45 | 1.7 | 1.35 | 1.7 | 1.8 | 2.25 | 3.2 | 2.9 | 1.9 | ..... |
| 16 | 1.3 | 1.4 | 1.7 | 1.35 | 1.7 | 1.8 | 2.22 | 3.5 | 2.95 | 1.9 | ..... |
| 17 | 1.3 | 1.78 | 1.7 | 1.35 | 1.75 | 1.8 | 2.15 | 3.6 | 2.8 | 1.9 | ..... |
| 18 | 1.3 | 1.8 | 1.8 | 1.8 | 1.7 | 1.8 | 2.2 | 5.0 | 2.7 | 1.9 | ..... |
| 19 | 1.3 | 1.8 | 1.72 | 2.2 | 1.7 | 1.55 | 2.2 | 3.5 | 2.55 | 1.85 | ..... |
| 20 | 1.3 | 2.2 | 1.75 | 2.1 | 1.7 | 1.5 | 2.2 | 3.2 | 2.2 | 1.8 | ..... |
| 21 | 1.3 | 2.2 | 1.75 | 2.1 | 1.7 | 1.5 | 2.3 | 3.45 | 1.9 | 1.8 | ..... |
| 22 | 1.3 | 1.82 | 1.75 | 2.2 | 1.65 | 1.5 | 2.4 | 3.6 | 1.95 | 1.8 | ..... |
| 23 | 1.3 | 1.45 | 1.7 | 2.1 | 1.65 | 1.5 | 2.5 | 4.0 | 2.0 | 1.8 | ..... |
| 24 | 1.3 | 1.38 | 1.7 | 2.1 | 1.65 | 1.5 | 2.6 | 3.7 | 2.0 | 1.8 | ..... |
| 25 | 1.3 | 1.35 | 1.65 | 2.2 | 1.6 | 1.5 | 2.8 | 3.75 | 2.0 | 1.8 | ..... |
| 26 | 1.3 | 1.35 | 1.65 | 2.8 | 1.6 | 1.5 | 3.0 | 3.7 | 2.0 | 1.8 | ..... |
| 27 | 1.3 | 1.35 | 1.65 | 2.8 | 1.6 | 1.6 | 3.0 | 3.7 | 2.1 | 1.8 | ..... |
| 28 | 1.25 | 1.35 | 1.6 | 2.8 | 1.85 | 1.6 | 3.0 | 3.65 | 2.2 | 1.75 | ..... |
| 29 | 1.25 | 1.38 | 1.6 | 2.6 | ..... | 1.7 | 3.0 | 3.4 | 2.55 | 1.8 | ..... |
| 30 | 1.25 | 1.35 | 1.55 | 2.38 | ..... | 1.8 | 2.8 | 3.35 | 2.3 | 1.8 | ..... |
| 31 | 1.25 | ..... | 1.5 | 1.65 | ..... | 1.8 | ..... | 3.3 | ..... | 1.9 | ..... |

*Daily discharge, in second-feet, of South Fork of Stanislaus River near Confidence, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 4 | 8 | 12 | 28 | 18 | 51 | 215 | 374 | 63 | 51 |
| 2 | 7 | 3 | 8 | 12 | 30 | 15 | 46 | 190 | 374 | 63 | 51 |
| 3 | 7 | 3 | 8 | 11 | 215 | 15 | 40 | 190 | 374 | 70 | 51 |
| 4 | 7 | 4 | 8 | 10 | 168 | 18 | 49 | 215 | 411 | 63 | 46 |
| 5 | 7 | 7 | 7 | 8 | 179 | 24 | 51 | 305 | 392 | 70 | 51 |
| 6 | 7 | 40 | 7 | 10 | 148 | 26 | 51 | 322 | 490 | 63 | 51 |
| 7 | 7 | 86 | 7 | 10 | 78 | 26 | 51 | 511 | 490 | 63 | 51 |
| 8 | 7 | 78 | 7 | 10 | 70 | 46 | 51 | 450 | 490 | 63 | 51 |
| 9 | 7 | 40 | 7 | 10 | 78 | 40 | 57 | 450 | 411 | 63 | 51 |
| 10 | 7 | 22 | 51 | 10 | 26 | 40 | 94 | 392 | 374 | 63 | 40 |
| 11 | 7 | 15 | 38 | 10 | 26 | 40 | 129 | 374 | 273 | 63 | ..... |
| 12 | 7 | 18 | 35 | 10 | 26 | 40 | 148 | 322 | 202 | 63 | ..... |
| 13 | 7 | 16 | 32 | 10 | 26 | 40 | 148 | 273 | 243 | 57 | ..... |
| 14 | 7 | 11 | 30 | 8 | 30 | 40 | 111 | 305 | 258 | 63 | ..... |
| 15 | 7 | 12 | 30 | 8 | 30 | 40 | 102 | 339 | 243 | 51 | ..... |
| 16 | 7 | 10 | 30 | 8 | 30 | 40 | 97 | 450 | 258 | 51 | ..... |
| 17 | 7 | 38 | 30 | 8 | 35 | 40 | 86 | 490 | 215 | 51 | ..... |
| 18 | 7 | 40 | 40 | 9 | 30 | 40 | 94 | 1,180 | 190 | 51 | ..... |
| 19 | 7 | 40 | 32 | 94 | 30 | 18 | 94 | 450 | 158 | 46 | ..... |
| 20 | 7 | 94 | 35 | 78 | 30 | 15 | 94 | 339 | 94 | 40 | ..... |
| 21 | 7 | 94 | 35 | 78 | 30 | 15 | 111 | 430 | 51 | 40 | ..... |
| 22 | 7 | 42 | 35 | 94 | 26 | 15 | 129 | 490 | 57 | 40 | ..... |
| 23 | 7 | 12 | 30 | 78 | 26 | 15 | 148 | 670 | 63 | 40 | ..... |
| 24 | 7 | 9 | 30 | 78 | 26 | 15 | 168 | 532 | 63 | 40 | ..... |
| 25 | 7 | 8 | 26 | 94 | 22 | 15 | 215 | 554 | 63 | 40 | ..... |
| 26 | 7 | 8 | 26 | 215 | 22 | 15 | 273 | 532 | 63 | 40 | ..... |
| 27 | 7 | 8 | 26 | 215 | 22 | 22 | 273 | 532 | 78 | 40 | ..... |
| 28 | 6 | 8 | 22 | 215 | 46 | 22 | 273 | 511 | 94 | 35 | ..... |
| 29 | 6 | 9 | 22 | 168 | ..... | 30 | 273 | 411 | 158 | 40 | ..... |
| 30 | 6 | 8 | 18 | 125 | ..... | 40 | 215 | 392 | 111 | 40 | ..... |
| 31 | 6 | ..... | 15 | 26 | ..... | 40 | ..... | 374 | ..... | 51 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of South Fork of Stanislaus River near Confidence, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 7 | 6 | 6.9 | 424 | C. |
| November | 94 | 3 | 26.2 | 1,560 | B. |
| December | 51 | 7 | 23.7 | 1,460 | B. |
| January | 215 | 8 | 55.9 | 3,440 | B. |
| February | 215 | 22 | 54.8 | 3,040 | B. |
| March | 46 | 15 | 27.9 | 1,720 | B. |
| April | 273 | 40 | 124 | 7,380 | B. |
| May | 1,180 | 190 | 425 | 26,100 | A. |
| June | 490 | 51 | 237 | 14,100 | B. |
| July | 70 | 35 | 52.5 | 3,230 | B. |
| August 1–10 | 51 | 40 | 49.4 | 980 | B. |
| The period | | | | 63,400 | |

## CALAVERAS RIVER AT JENNY LIND, CAL.

LOCATION.—In the SE. ¼ sec. 22, T. 3 N., R. 10 E., at highway bridge on Milton Road, about one-fourth mile southeast of Jenny Lind, and 27 miles above junction with San Joaquin River. North and South forks unite about 15 miles above the station.

RECORDS AVAILABLE.—January 1 to June 30, 1907; December 1, 1907, to June 30, 1908; and November 1, 1908, to September 30, 1913.

DRAINAGE AREA.—395 square miles.

GAGE.—Vertical staff in two sections. High-water section is on downstream end of middle pier of bridge; low-water section is underneath bridge on right bank.

CHANNEL.—Gravel and small bowlders; shifts considerably at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

STORAGE.—A small amount of storage is developed at Salt Springs Valley for use in connection with dredging operations below Jenny Lind.

ACCURACY.—Results good.

COOPERATION.—Gage-height record during the high-water season, December to June, is furnished by the United States Weather Bureau through N. R. Taylor, local forecaster.

*Discharge measurements of Calaveras River at Jenny Lind, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 24 | R. C. Rice | −0.32 | 13 | Apr. 14 | Lasley Lee | 0.06 | 75 |
| Jan. 24 | E. C. Murphy | .30 | 147 | Aug. 17 | Charles Leidl | −1.10 | (a) |
| Feb. 15 | do | − .02 | 55 | | | | |

a Water standing in pool at gage. Inflow to pool measured 0.03 second-foot; no water flowing over control. Approximate point of zero flow, −0.6 foot.

*Daily gage height, in feet, of Calaveras River at Jenny Lind, Cal., for the year ending Sept. 30, 1913.*

[P. F. Sinclair, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | −0.3 | −0.3 | −0.2 | −0.2 | 0.0 | −0.1 | 0.1 | −0.1 | −0.4 | −0.6 | −0.8 | −1.0 |
| 2 | − .3 | − .3 | − .2 | − .2 | .0 | − .1 | .0 | − .1 | − .3 | − .6 | − .8 | −1.0 |
| 3 | − .3 | − .3 | − .2 | − .2 | .0 | − .1 | .0 | − .1 | − .4 | − .6 | − .8 | −1.0 |
| 4 | − .3 | − .25 | − .2 | − .2 | .0 | − .1 | .0 | − .1 | − .4 | − .6 | − .8 | − .9 |
| 5 | − .3 | − .2 | − .2 | − .2 | .0 | − .1 | .0 | − .2 | − .4 | − .6 | − .8 | − .9 |
| 6 | − .3 | − .2 | − .2 | − .1 | .0 | − .1 | .0 | − .2 | − .4 | − .6 | − .8 | − .9 |
| 7 | − .3 | − .15 | − .2 | − .1 | .0 | − .1 | .3 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 8 | − .3 | − .1 | − .2 | .0 | .0 | − .1 | .3 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 9 | − .3 | − .1 | − .2 | .0 | .0 | − .1 | .2 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 10 | − .3 | .0 | − .2 | .0 | .0 | − .1 | .2 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 11 | − .3 | .0 | − .2 | .0 | .0 | − .1 | .1 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 12 | − .3 | − .1 | − .2 | .0 | .0 | − .1 | .0 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 13 | − .3 | − .1 | − .2 | − .1 | .0 | − .1 | .0 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 14 | − .3 | − .1 | − .2 | − .1 | .0 | − .1 | .0 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 15 | − .3 | − .1 | − .1 | + .7 | .0 | − .1 | .0 | − .2 | − .4 | − .7 | − .8 | − .9 |
| 16 | − .3 | − .2 | .0 | 1.2 | .0 | − .1 | .3 | − .2 | − .4 | − .7 | − .9 | − .9 |
| 17 | − .3 | − .2 | .0 | 1.4 | .0 | − .2 | .2 | − .2 | − .4 | − .7 | − .9 | − .9 |
| 18 | − .3 | − .2 | .0 | .8 | .0 | − .2 | .1 | − .2 | − .4 | − .7 | − .9 | − .9 |
| 19 | − .3 | − .2 | .0 | 2.0 | .0 | − .2 | .0 | − .2 | − .4 | − .7 | −1.0 | − .9 |
| 20 | − .3 | − .2 | .0 | 1.0 | .0 | .0 | .0 | − .3 | − .4 | − .7 | −1.0 | − .9 |
| 21 | − .3 | − .2 | .0 | .6 | .0 | .0 | .0 | − .3 | − .4 | − .7 | −1.0 | − .9 |
| 22 | − .3 | − .2 | .0 | .4 | .0 | .1 | .0 | − .3 | − .4 | − .8 | −1.0 | − .9 |
| 23 | − .3 | − .2 | .0 | .9 | .0 | .1 | .0 | − .3 | − .5 | − .8 | −1.0 | − .9 |
| 24 | − .3 | − .2 | .0 | .3 | .0 | .3 | .0 | − .3 | − .5 | − .8 | −1.0 | − .9 |
| 25 | − .3 | − .2 | − .1 | .2 | .0 | .2 | .0 | − .3 | − .6 | − .8 | −1.0 | − .9 |
| 26 | − .3 | − .2 | − .1 | .3 | − .1 | .2 | .0 | − .3 | − .6 | − .8 | −1.0 | − .9 |
| 27 | − .3 | − .2 | − .2 | .2 | − .1 | .2 | .0 | − .3 | − .6 | − .8 | −1.0 | − .9 |
| 28 | − .3 | − .2 | − .2 | .3 | − .1 | .2 | .0 | − .4 | − .6 | − .8 | −1.0 | − .9 |
| 29 | − .3 | − .2 | − .2 | .1 | ..... | .2 | .0 | − .4 | − .6 | − .8 | −1.0 | − .9 |
| 30 | − .3 | − .2 | − .2 | .0 | ..... | .2 | .0 | − .4 | − .6 | − .8 | −1.0 | − .9 |
| 31 | − .3 | ..... | − .2 | .0 | ..... | .1 | ..... | − .4 | ..... | − .8 | −1.0 | ..... |

*Daily discharge, in second-feet, of Calaveras River at Jenny Lind, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17 | 17 | 27 | 27 | 62 | 42 | 84 | 42 | 12 | 4 |
| 2 | 17 | 17 | 27 | 27 | 62 | 42 | 62 | 42 | 17 | 4 |
| 3 | 17 | 17 | 27 | 27 | 62 | 42 | 62 | 42 | 12 | 4 |
| 4 | 17 | 22 | 27 | 27 | 62 | 42 | 62 | 42 | 12 | 4 |
| 5 | 17 | 27 | 27 | 27 | 62 | 42 | 62 | 27 | 12 | 4 |
| 6 | 17 | 27 | 27 | 42 | 62 | 42 | 62 | 27 | 12 | 2 |
| 7 | 17 | 34 | 27 | 42 | 62 | 42 | 142 | 27 | 12 | 4 |
| 8 | 17 | 42 | 27 | 62 | 62 | 42 | 142 | 27 | 12 | 2 |
| 9 | 17 | 42 | 27 | 62 | 62 | 42 | 111 | 27 | 12 | 2 |
| 10 | 17 | 62 | 27 | 62 | 62 | 42 | 111 | 27 | 12 | 2 |
| 11 | 17 | 62 | 27 | 62 | 62 | 42 | 84 | 27 | 12 | 2 |
| 12 | 17 | 42 | 27 | 62 | 62 | 42 | 62 | 27 | 12 | 2 |
| 13 | 17 | 42 | 27 | 42 | 62 | 42 | 62 | 27 | 12 | 2 |
| 14 | 17 | 42 | 27 | 42 | 62 | 42 | 62 | 27 | 12 | 2 |
| 15 | 17 | 42 | 42 | 305 | 62 | 42 | 62 | 27 | 12 | 2 |
| 16 | 17 | 27 | 62 | 595 | 62 | 42 | 142 | 27 | 12 | 2 |
| 17 | 17 | 27 | 62 | 745 | 62 | 27 | 111 | 27 | 12 | 2 |
| 18 | 17 | 27 | 62 | 356 | 62 | 27 | 84 | 27 | 12 | 2 |
| 19 | 17 | 27 | 62 | 1,330 | 62 | 27 | 62 | 27 | 12 | 2 |
| 20 | 17 | 27 | 62 | 470 | 62 | 62 | 62 | 17 | 12 | 2 |
| 21 | 17 | 27 | 62 | 258 | 62 | 62 | 62 | 17 | 12 | 2 |
| 22 | 17 | 27 | 62 | 176 | 62 | 84 | 62 | 17 | 12 | 0 |
| 23 | 17 | 27 | 62 | 411 | 62 | 84 | 62 | 17 | 8 | 0 |
| 24 | 17 | 27 | 62 | 142 | 62 | 142 | 62 | 17 | 8 | 0 |
| 25 | 17 | 27 | 42 | 111 | 62 | 111 | 62 | 17 | 4 | 0 |
| 26 | 17 | 27 | 42 | 142 | 42 | 111 | 62 | 17 | 4 | 0 |
| 27 | 17 | 27 | 27 | 111 | 42 | 111 | 62 | 17 | 4 | 0 |
| 28 | 17 | 27 | 27 | 142 | 42 | 111 | 62 | 12 | 4 | 0 |
| 29 | 17 | 27 | 27 | 84 | ..... | 111 | 62 | 12 | 4 | 0 |
| 30 | 17 | 27 | 27 | 62 | ..... | 111 | 62 | 12 | 4 | 0 |
| 31 | 17 | ..... | 27 | 62 | ..... | 84 | ..... | 12 | ..... | 0 |

NOTE.—Discharge determined from a fairly well-defined curve. Practically no flow July 22 to Sept. 30, 1913.

*Monthly discharge of Calaveras River at Jenny Lind, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 17 | 17 | 17.0 | 1,040 | C. |
| November | 62 | 17 | 31.4 | 1,870 | B. |
| December | 62 | 27 | 38.6 | 2,370 | B. |
| January | 1,330 | 27 | 197 | 12,100 | B. |
| February | 62 | 42 | 59.9 | 3,330 | B. |
| March | 142 | 27 | 62.5 | 3,840 | B. |
| April | 142 | 62 | 77.1 | 4,590 | B. |
| May | 42 | 12 | 24.4 | 1,500 | C. |
| June | 17 | 4 | 10.3 | 613 | C. |
| July | 4 | 0 | 1.7 | 104 | D. |
| August | 0 | 0 | .0 | 0 | |
| September | 0 | 0 | .0 | 0 | |
| The year | 1,330 | 0 | 43.4 | 31,400 | |

## MOKELUMNE RIVER AND TRIBUTARIES.

### MOKELUMNE RIVER NEAR CLEMENTS, CAL.

LOCATION.—In the NW. ¼ sec. 15, T. 4 N., R. 8 E., at highway bridge, about 1 mile north of Clements. The North and Middle forks unite about 35 miles above Clements. Cosumnes River enters about 19½ miles below the station.

RECORDS AVAILABLE.—October 28, 1904, to September 30, 1913.

DRAINAGE AREA.—642 square miles.

GAGE.—Staff in four sections at bridge; No. 1 is vertical and fastened to pile on right bank; No. 2 is inclined, directly back of No. 1; No. 3 is vertical and bolted to middle pier near downstream end; No. 4 is vertical and bolted to left abutment near downstream end.

CHANNEL.—Sand and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Several small ditches divert water for mining and local irrigation above the station. Power is develop on the North Fork and part of the water is not returned to the stream. Flow is partly regulated by storage.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Mokelumne River near Clements, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 22 | R. C. Rice | 3.27 | 111 | May 14 | E. C. Murphy | [a] 6.53 | 1,730 |
| Jan. 25 | E. C. Murphy | 3.75 | 271 | June 3 | do | 6.54 | 1,820 |
| Feb. 14 | do | 3.71 | 246 | 4 | do | 6.26 | 1,570 |
| Mar. 12 | do | 4.29 | 454 | 20 | do | 4.11 | 393 |
| Apr. 15 | Lasley Lee | 5.62 | 1,270 | 21 | do | 4.22 | 448 |
| 15 | do | 5.48 | 1,140 | Aug. 15 | Charles Leidl | 3.28 | 136 |
| May 13 | E. C. Murphy | 7.02 | 2,130 | | | | |

[a] Gage painted on pier read 6.38 feet.

*Daily gage height, in feet, of Mokelumne River near Clements, Cal., for the year ending Sept. 30. 1913.*

[Miss Reba Gaskill, Mrs. Ethel Roush, and Mrs. J. S. Hodges, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.8 | 3.55 | 3.65 | 3.55 | 3.6 | 3.55 | 5.4 | 5.6 | 7.0 | 3.65 | 3.4 | 3.25 |
| 2 | 2.55 | 3.6 | 3.4 | 3.7 | 3.65 | 3.6 | 5.8 | 5.8 | 6.7 | 3.7 | 3.2 | 3.3 |
| 3 | 2.5 | 3.8 | 3.25 | 3.45 | 4.05 | 3.75 | 5.2 | 5.8 | 6.6 | 3.35 | 3.2 | 3.2 |
| 4 | 2.5 | 3.95 | 3.45 | 3.6 | 4.25 | 3.8 | 5.3 | 5.6 | 6.2 | 3.25 | 3.0 | 3.2 |
| 5 | 2.5 | 3.65 | 3.6 | ..... | 3.75 | 3.45 | 6.0 | 7.1 | 6.4 | 3.4 | 2.4 | 3.2 |
| 6 | 2.55 | 3.95 | 3.35 | 3.35 | 3.85 | 3.55 | 5.7 | 8.1 | 6.5 | 3.45 | 2.4 | 3.1 |
| 7 | 2.95 | 6.2 | 3.25 | 3.55 | 3.85 | 3.45 | 5.7 | 8.0 | 6.7 | 3.3 | 3.1 | 3.1 |
| 8 | 2.9 | 6.4 | 3.2 | 3.4 | 3.85 | 3.65 | 5.3 | 7.8 | 6.4 | 3.45 | 3.15 | 2.85 |
| 9 | 2.9 | 5.8 | 3.25 | 3.35 | 4.25 | 3.8 | 5.0 | 7.6 | 6.3 | 3.25 | 3.05 | 2.95 |
| 10 | 2.85 | 6.2 | 3.3 | 3.6 | 3.75 | 3.85 | 5.4 | 8.2 | 5.4 | 3.25 | 3.15 | 3.05 |
| 11 | 2.9 | 6.1 | 3.15 | 3.3 | 3.8 | 4.2 | 6.2 | 7.6 | 5.1 | 3.35 | 3.15 | 3.05 |
| 12 | 3.05 | 5.8 | 3.25 | 3.25 | 4.05 | 4.15 | 6.2 | 6.8 | 5.1 | 3.3 | 3.05 | 3.10 |
| 13 | 2.9 | 5.8 | 3.35 | 3.35 | 3.8 | 3.8 | 6.0 | 6.8 | 5.4 | 3.35 | 3.15 | 3.25 |
| 14 | 2.85 | 4.75 | 3.45 | 3.6 | 3.75 | ..... | 6.0 | 6.4 | 5.5 | 3.25 | 3.25 | 3.2 |
| 15 | 2.95 | 4.25 | 3.55 | 4.65 | 3.9 | 3.8 | 5.6 | 6.7 | 5.2 | 3.15 | 3.2 | 3.1 |
| 16 | 3.0 | 4.0 | 3.5 | 4.65 | 4.6 | 3.85 | 5.6 | 7.0 | 4.95 | 3.35 | 3.3 | 3.2 |
| 17 | 2.8 | 3.7 | 3.45 | 4.15 | 4.1 | 3.85 | 5.4 | 7.6 | 4.7 | 3.4 | 3.25 | 3.15 |
| 18 | 2.95 | 3.55 | 3.6 | 4.25 | 4.1 | 3.65 | 5.2 | 8.9 | 4.55 | 3.2 | 3.2 | 3.1 |
| 19 | 3.15 | 3.55 | 3.45 | 5.3 | ..... | 3.9 | 5.3 | 8.5 | 4.4 | 3.3 | 3.2 | 3.1 |
| 20 | 3.2 | 3.55 | 3.6 | 5.8 | 4.35 | 4.15 | 5.1 | 7.3 | 4.25 | 3.15 | 3.35 | 3.15 |
| 21 | 3.0 | 3.7 | 3.4 | 4.95 | 4.2 | 4.2 | 5.6 | 7.5 | 4.1 | 3.25 | 3.5 | 3.2 |
| 22 | 3.3 | 3.5 | 3.25 | 4.5 | 4.05 | 4.6 | 5.8 | 7.6 | 3.95 | 3.25 | 3.65 | 2.95 |
| 23 | 3.45 | 3.65 | 3.25 | 4.2 | 3.7 | 4.1 | 6.4 | 7.8 | 4.05 | 3.1 | 3.5 | 3.1 |
| 24 | 3.55 | 3.55 | 3.55 | ..... | 3.7 | ..... | 6.5 | 7.6 | 3.9 | 3.4 | 3.6 | 3.25 |
| 25 | 3.5 | 3.5 | 3.65 | 3.7 | 4.0 | ..... | 7.4 | 7.6 | 3.95 | 3.4 | 3.6 | 3.15 |
| 26 | 3.45 | 3.45 | 3.75 | 3.7 | 4.25 | 3.85 | 8.4 | 8.4 | 3.85 | 3.35 | 3.45 | 3.15 |
| 27 | 3.65 | 3.9 | 3.7 | 3.75 | 4.4 | 3.95 | 8.2 | 8.2 | 3.8 | 3.95 | 3.55 | 2.95 |
| 28 | 3.45 | 3.95 | 3.45 | 3.85 | 4.0 | 4.4 | 6.9 | 7.8 | 3.85 | 4.05 | 3.25 | 3.0 |
| 29 | 3.4 | 3.75 | 3.25 | 5.0 | ..... | 4.6 | 6.2 | 6.9 | 3.9 | 3.9 | 3.25 | 3.0 |
| 30 | 3.5 | 3.55 | 3.25 | 3.9 | ..... | 4.95 | 5.8 | 7.0 | 3.85 | 3.75 | 3.4 | 3.15 |
| 31 | 3.4 | ..... | 3.25 | 3.45 | ..... | 4.7 | ..... | 7.0 | ..... | 3.25 | 3.45 | ..... |

*Daily discharge, in second-feet, of Mokelumne River near Clements, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 51 | 160 | 235 | 205 | 220 | 205 | 1,030 | 1,140 | 2,120 | 235 | 163 | 130 |
| 2 | 28 | 170 | 163 | 250 | 235 | 220 | 1,260 | 1,260 | 1,880 | 250 | 120 | 140 |
| 3 | 23 | 222 | 130 | 176 | 371 | 266 | 920 | 1,260 | 1,810 | 152 | 120 | 120 |
| 4 | 23 | 270 | 176 | 220 | 451 | 282 | 975 | 1,140 | 1,520 | 130 | 88 | 120 |
| 5 | 23 | 182 | 220 | 186 | 266 | 176 | 1,400 | 2,200 | 1,660 | 163 | 26 | 120 |
| 6 | 28 | 270 | 152 | 152 | 300 | 205 | 1,200 | 3,070 | 1,740 | 176 | 26 | 102 |
| 7 | 68 | 1,380 | 130 | 205 | 300 | 176 | 1,200 | 2,980 | 1,880 | 140 | 102 | 102 |
| 8 | 62 | 1,520 | 120 | 163 | 300 | 235 | 975 | 2,800 | 1,660 | 176 | 111 | 69 |
| 9 | 62 | 1,260 | 130 | 152 | 451 | 282 | 810 | 2,620 | 1,600 | 130 | 95 | 82 |
| 10 | 56 | 1,520 | 140 | 220 | 266 | 300 | 1,030 | 3,160 | 1,030 | 130 | 111 | 95 |
| 11 | 62 | 1,460 | 111 | 140 | 282 | 430 | 1,520 | 2,620 | 865 | 152 | 111 | 95 |
| 12 | 80 | 1,260 | 130 | 130 | 371 | 410 | 1,520 | 1,960 | 865 | 140 | 95 | 102 |
| 13 | 62 | 1,260 | 152 | 152 | 282 | 282 | 1,400 | 1,960 | 1,030 | 152 | 111 | 130 |
| 14 | 56 | 680 | 176 | 220 | 266 | 282 | 1,400 | 1,660 | 1,080 | 130 | 130 | 120 |
| 15 | 68 | 451 | 205 | 630 | 317 | 282 | 1,140 | 1,880 | 920 | 111 | 120 | 102 |
| 16 | 74 | 352 | 190 | 630 | 605 | 300 | 1,140 | 2,120 | 782 | 152 | 140 | 120 |
| 17 | 51 | 250 | 176 | 410 | 390 | 300 | 1,030 | 2,620 | 655 | 163 | 130 | 111 |
| 18 | 68 | 205 | 220 | 451 | 390 | 235 | 920 | 3,840 | 582 | 120 | 120 | 102 |
| 19 | 94 | 205 | 176 | 975 | 442 | 317 | 975 | 3,440 | 516 | 140 | 120 | 102 |
| 20 | 101 | 205 | 220 | 1,260 | 494 | 410 | 865 | 2,360 | 451 | 111 | 152 | 111 |
| 21 | 74 | 250 | 163 | 782 | 430 | 430 | 1,140 | 2,530 | 390 | 130 | 190 | 120 |
| 22 | 115 | 190 | 130 | 560 | 371 | 605 | 1,260 | 2,620 | 334 | 130 | 235 | 82 |
| 23 | 140 | 235 | 130 | 430 | 250 | 390 | 1,660 | 2,800 | 371 | 102 | 190 | 102 |
| 24 | 160 | 205 | 205 | 340 | 250 | 360 | 1,740 | 2,620 | 317 | 163 | 220 | 130 |
| 25 | 149 | 190 | 235 | 250 | 352 | 330 | 2,440 | 2,620 | 334 | 163 | 220 | 111 |
| 26 | 140 | 176 | 266 | 250 | 451 | 300 | 3,340 | 3,340 | 300 | 152 | 176 | 111 |
| 27 | 182 | 317 | 250 | 266 | 516 | 334 | 3,160 | 3,160 | 282 | 334 | 205 | 82 |
| 28 | 140 | 334 | 176 | 300 | 352 | 516 | 2,040 | 2,800 | 300 | 371 | 130 | 88 |
| 29 | 131 | 266 | 130 | 810 | ..... | 605 | 1,520 | 2,040 | 317 | 317 | 130 | 88 |
| 30 | 149 | 205 | 130 | 317 | ..... | 782 | 1,260 | 2,120 | 300 | 266 | 163 | 111 |
| 31 | 131 | ..... | 130 | 176 | ..... | 655 | ..... | 2,120 | ..... | 130 | 176 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days for which gage heights are missing.

*Monthly discharge of Mokelumne River near Clements, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 182 | 23 | 85.5 | 5,260 | C. |
| November | 1,520 | 160 | 522 | 31,100 | A. |
| December | 266 | 111 | 171 | 10,500 | B. |
| January | 1,260 | 130 | 368 | 22,600 | A. |
| February | 605 | 220 | 356 | 19,800 | A. |
| March | 782 | 176 | 352 | 21,600 | A. |
| April | 3,340 | 810 | 1,410 | 83,900 | B. |
| May | 3,840 | 1,140 | 2,410 | 148,000 | A. |
| June | 2,120 | 282 | 930 | 55,300 | A. |
| July | 371 | 102 | 171 | 10,500 | B. |
| August | 235 | 26 | 136 | 8,360 | B. |
| September | 140 | 69 | 107 | 6,370 | B. |
| The year | 3,840 | 23 | 585 | 423,000 | |

## MIDDLE FORK OF MOKELUMNE RIVER NEAR WEST POINT, CAL.

LOCATION.—In sec. 10, T. 6 N., R. 13 E., above highway bridge, 3½ miles above junction with the South Fork, 1¼ miles below mouth of Bear Creek, and 1 mile south of West Point.

RECORDS AVAILABLE.—October 9, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections, fastened to trees on right bank, 1,000 feet above bridge.

CHANNEL.—Bowlders and gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from car and cable one-half mile above gage or by wading.

DIVERSIONS.—Mokelumne Hill and Valley Springs ditch (capacity, about 6 second-feet) diverts about 2 miles above the station.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of Middle Fork of Mokelumne River near West Point, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 25 | R. C. Rice | 2.80 | 6.6 | Apr. 13 | Lasley Lee | 4.04 | [a] 89 |
| Apr. 12 | Lasley Lee | 3.92 | [a] 75 | | | | |

[a] Estimated inflow between measuring section and gage 2 second-feet has been added.

*Daily gage height, in feet, of Middle Fork of Mokelumne River near West Point, Cal., for the year ending Sept. 30, 1913.*

[Russell Bardsley, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.70 | 2.85 | 2.85 | 2.90 | 3.40 | 3.20 | 3.90 | 3.90 | 3.35 | 2.78 | 2.58 | 2.60 |
| 2 | 2.70 | 2.87 | 2.85 | 2.90 | 3.40 | 3.20 | 3.95 | 3.85 | 3.30 | 2.75 | 2.60 | 2.58 |
| 3 | 2.70 | 2.88 | 2.85 | 2.90 | 3.38 | 3.20 | 4.0 | 3.85 | 3.30 | 2.80 | 2.60 | 2.60 |
| 4 | 2.70 | 2.88 | 2.83 | 2.98 | 3.35 | 3.20 | 3.95 | 3.80 | 3.30 | 2.78 | 2.57 | 2.57 |
| 5 | 2.71 | 2.87 | 2.85 | 3.00 | 3.35 | 3.20 | 4.0 | 3.80 | 3.35 | 2.78 | 2.55 | 2.55 |
| 6 | 2.72 | 3.45 | 2.85 | 2.98 | 3.35 | 3.20 | 4.1 | 3.82 | 3.32 | 2.75 | 2.68 | 2.58 |
| 7 | 2.73 | 3.40 | 2.86 | 3.10 | 3.38 | 3.25 | 4.15 | 3.80 | 3.30 | 2.73 | 2.60 | 2.60 |
| 8 | 2.78 | 3.10 | 2.85 | 3.15 | 3.40 | 3.25 | 4.2 | 3.75 | 3.35 | 2.70 | 2.58 | 2.60 |
| 9 | 2.75 | 3.40 | 2.85 | 3.20 | 3.38 | 3.28 | 4.1 | 3.75 | 3.28 | 2.68 | 2.55 | 2.58 |
| 10 | 2.75 | 3.08 | 2.85 | 3.20 | 3.35 | 3.30 | 4.1 | 3.78 | 3.25 | 2.65 | 2.60 | 2.55 |
| 11 | 2.75 | 3.09 | 2.90 | 3.15 | 3.35 | 3.30 | 4.05 | 3.75 | 3.20 | 2.67 | 2.60 | 2.53 |
| 12 | 2.76 | 3.00 | 2.88 | 3.20 | 3.35 | 3.35 | 4.0 | 3.75 | 3.20 | 2.65 | 2.55 | 2.50 |
| 13 | 2.75 | 2.95 | 2.90 | 3.15 | 3.40 | 3.30 | 3.90 | 3.70 | 3.15 | 2.65 | 2.53 | 2.50 |
| 14 | 2.75 | 2.95 | 2.88 | 3.22 | 3.38 | 3.34 | 3.90 | 3.70 | 3.10 | 2.65 | 2.50 | 2.53 |
| 15 | 2.75 | 2.90 | 3.00 | 3.25 | 3.35 | 3.35 | 3.90 | 3.65 | 3.08 | 2.63 | 2.48 | 2.50 |
| 16 | 2.75 | 2.90 | 3.30 | 3.20 | 3.40 | 3.35 | 3.90 | 3.65 | 3.05 | 2.65 | 2.50 | 2.55 |
| 17 | 2.73 | 2.90 | 3.10 | 3.40 | 3.40 | 3.35 | 3.90 | 3.60 | 3.00 | 2.65 | 2.55 | 2.50 |
| 18 | 2.73 | 2.94 | 3.08 | 3.50 | 3.38 | 3.40 | 3.90 | 3.55 | 3.00 | 2.62 | 2.53 | 2.50 |
| 19 | 2.77 | 3.00 | 3.05 | 3.70 | 3.35 | 3.45 | 3.95 | 3.55 | 2.95 | 2.63 | 2.50 | 2.55 |
| 20 | 2.75 | 3.00 | 3.00 | 3.50 | 3.30 | 3.40 | 3.90 | 3.60 | 2.90 | 2.60 | 2.53 | 2.58 |
| 21 | 2.75 | 2.95 | 3.10 | 3.40 | 3.25 | 3.40 | 3.85 | 3.65 | 2.85 | 2.65 | 2.55 | 2.60 |
| 22 | 2.76 | 2.90 | 3.20 | 3.40 | 3.20 | 3.45 | 3.90 | 3.60 | 2.88 | 2.63 | 2.58 | 2.58 |
| 23 | 2.90 | 2.85 | 3.30 | 3.40 | 3.20 | 3.50 | 3.90 | 3.55 | 2.95 | 2.60 | 2.60 | 2.55 |
| 24 | 2.85 | 2.85 | 3.20 | 3.40 | 3.20 | 3.50 | 3.90 | 3.50 | 3.00 | 2.67 | 2.60 | 2.52 |
| 25 | 2.80 | 2.85 | 3.15 | 3.40 | 3.20 | 3.60 | 3.98 | 3.50 | 2.98 | 2.65 | 2.58 | 2.55 |
| 26 | 2.78 | 2.85 | 3.10 | 3.40 | 3.20 | 3.55 | 3.98 | 3.48 | 2.90 | 2.62 | 2.55 | 2.55 |
| 27 | 2.81 | 2.85 | 3.08 | 3.45 | 3.21 | 3.60 | 3.95 | 3.45 | 2.85 | 2.63 | 2.60 | 2.57 |
| 28 | 2.85 | 2.88 | 3.08 | 3.45 | 3.20 | 3.70 | 3.95 | 3.40 | 2.90 | 2.60 | 2.60 | 2.60 |
| 29 | 2.90 | 2.86 | 3.00 | 3.40 | ..... | 3.75 | 3.92 | 3.40 | 2.90 | 2.58 | 2.58 | 2.60 |
| 30 | 2.80 | 2.85 | 3.00 | 3.40 | ..... | 3.70 | 3.90 | 3.38 | 2.95 | 2.58 | 2.55 | 2.60 |
| 31 | 2.85 | ..... | 2.98 | 3.40 | ..... | 3.70 | ..... | 3.35 | ..... | 2.60 | 2.58 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Mokelumne River near West Point, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.0 | 7.8 | 7.8 | 9.0 | 31 | 20 | 74 | 74 | 28 | 6.2 | 3.8 | 4.0 |
| 2 | 5.0 | 8.2 | 7.8 | 9.0 | 31 | 20 | 80 | 69 | 25 | 5.8 | 4.0 | 3.8 |
| 3 | 5.0 | 8.5 | 7.8 | 9.0 | 30 | 20 | 85 | 69 | 25 | 6.5 | 4.0 | 4.0 |
| 4 | 5.0 | 8.5 | 7.2 | 11 | 28 | 20 | 80 | 64 | 25 | 6.2 | 3.7 | 3.7 |
| 5 | 5.2 | 8.2 | 7.8 | 12 | 28 | 20 | 85 | 64 | 28 | 6.2 | 3.5 | 3.5 |
| 6 | 5.3 | 34 | 7.8 | 11 | 28 | 20 | 97 | 66 | 26 | 5.8 | 4.8 | 3.8 |
| 7 | 5.4 | 31 | 8.0 | 16 | 30 | 22 | 104 | 64 | 25 | 5.4 | 4.0 | 4.0 |
| 8 | 6.2 | 16 | 7.8 | 18 | 31 | 22 | 111 | 60 | 28 | 5.0 | 3.8 | 4.0 |
| 9 | 5.8 | 31 | 7.8 | 20 | 30 | 24 | 97 | 60 | 24 | 4.8 | 3.5 | 3.8 |
| 10 | 5.8 | 15 | 7.8 | 20 | 28 | 25 | 97 | 62 | 22 | 4.5 | 4.0 | 3.5 |
| 11 | 5.8 | 16 | 9.0 | 18 | 28 | 25 | 91 | 60 | 20 | 4.7 | 4.0 | 3.3 |
| 12 | 5.9 | 12 | 8.5 | 20 | 28 | 28 | 85 | 60 | 20 | 4.5 | 3.5 | 3.0 |
| 13 | 5.8 | 10 | 9.0 | 18 | 31 | 25 | 74 | 55 | 18 | 4.5 | 3.3 | 3.0 |
| 14 | 5.8 | 10 | 8.5 | 21 | 30 | 27 | 74 | 55 | 16 | 4.5 | 3.0 | 3.3 |
| 15 | 5.8 | 9.0 | 12 | 22 | 28 | 28 | 74 | 50 | 15 | 4.3 | 2.8 | 3.0 |
| 16 | 5.8 | 9.0 | 25 | 20 | 31 | 28 | 74 | 50 | 14 | 4.5 | 3.0 | 3.5 |
| 17 | 5.4 | 9.0 | 16 | 31 | 31 | 28 | 74 | 46 | 12 | 4.5 | 3.5 | 3.0 |
| 18 | 5.4 | 10 | 15 | 38 | 30 | 31 | 74 | 42 | 12 | 4.2 | 3.3 | 3.0 |
| 19 | 6.0 | 12 | 14 | 55 | 28 | 34 | 80 | 42 | 10 | 4.3 | 3.0 | 3.5 |
| 20 | 5.8 | 12 | 12 | 38 | 25 | 31 | 74 | 46 | 9.0 | 4.0 | 3.3 | 3.8 |
| 21 | 5.8 | 10 | 16 | 31 | 22 | 31 | 69 | 50 | 7.8 | 4.5 | 3.5 | 4.0 |
| 22 | 5.9 | 9.0 | 20 | 31 | 20 | 34 | 74 | 46 | 8.5 | 4.3 | 3.8 | 3.8 |
| 23 | 9.0 | 7.8 | 25 | 31 | 20 | 38 | 74 | 42 | 10 | 4.0 | 4.0 | 3.5 |
| 24 | 7.8 | 7.8 | 20 | 31 | 20 | 38 | 74 | 38 | 12 | 4.7 | 4.0 | 3.2 |
| 25 | 6.5 | 7.8 | 18 | 31 | 20 | 46 | 83 | 38 | 11 | 4.5 | 3.8 | 3.5 |
| 26 | 6.2 | 7.8 | 16 | 31 | 20 | 42 | 83 | 37 | 9.0 | 4.2 | 3.5 | 3.5 |
| 27 | 6.8 | 7.8 | 15 | 34 | 20 | 46 | 80 | 34 | 7.8 | 4.3 | 4.0 | 3.7 |
| 28 | 7.8 | 8.5 | 15 | 34 | 20 | 55 | 80 | 31 | 9.0 | 4.0 | 4.0 | 4.0 |
| 29 | 9.0 | 8.0 | 12 | 31 | ..... | 60 | 76 | 31 | 9.0 | 3.8 | 3.8 | 4.0 |
| 30 | 6.5 | 7.8 | 12 | 31 | ..... | 55 | 74 | 30 | 10 | 3.8 | 3.5 | 4.0 |
| 31 | 7.8 | ..... | 11 | 31 | ..... | 55 | ..... | 28 | ..... | 4.0 | 3.8 | ..... |

NOTE.—Discharge determined by a rating curve well defined below 900 second-feet.

*Monthly discharge of Middle Fork of Mokelumne River near West Point, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 9.0 | 5.0 | 6.14 | 378 | C. |
| November | 34 | 7.8 | 12.0 | 714 | B. |
| December | 25 | 7.2 | 12.5 | 769 | B. |
| January | 55 | 9.0 | 24.6 | 1,510 | A. |
| February | 31 | 20 | 26.7 | 1,480 | A. |
| March | 60 | 20 | 32.2 | 1,980 | A. |
| April | 111 | 74 | 81.7 | 4,860 | A. |
| May | 74 | 28 | 50.4 | 3,100 | A. |
| June | 28 | 7.8 | 16.5 | 982 | B. |
| July | 6.5 | 3.8 | 4.73 | 291 | C. |
| August | 4.8 | 2.8 | 3.66 | 225 | C. |
| September | 4.0 | 3.0 | 3.59 | 214 | C. |
| The year | 111 | 2.8 | 22.8 | 16,500 | |

## SOUTH FORK OF MOKELUMNE RIVER NEAR RAILROAD FLAT, CAL.

LOCATION.—In sec. 34, T. 6 N., R. 14 E., at Laidet ranch, about 5 miles above mouth of Licking Fork, and 5 miles east of Railroad Flat.

RECORDS AVAILABLE.—October 23, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to alder tree on right bank 100 feet above suspension footbridge.

CHANNEL.—Gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet below gage or by wading.

DIVERSIONS.—An irrigation and power ditch, with a capacity of about 2 second-feet, diverts water at base of Blue Mountain above the station. Some water is also used for irrigation at Laidet ranch.

WINTER FLOW.—Discharge relation sometimes slightly affected by ice.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of South Fork of Mokelumne River near Railroad Flat, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Oct. 26 | R. C. Rice | 1.15 | 7.1 |
| Apr. 11 | Lasley Lee | 1.72 | 54 |

*Daily gage height, in feet, of South Fork of Mokelumne River near Railroad Flat, Cal., for the year ending Sept. 30, 1913.*

[Clovis Laidet, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.08 | 1.13 | 1.11 | 1.22 | 1.41 | 1.28 | 1.79 | 1.66 | 1.47 | 1.23 | 1.10 | 1.04 |
| 2 | 1.09 | 1.12 | 1.15 | 1.18 | 1.41 | 1.28 | 1.72 | 1.64 | 1.46 | 1.23 | 1.09 | 1.04 |
| 3 | 1.08 | 1.12 | 1.18 | 1.14 | 1.39 | 1.28 | 1.65 | 1.64 | 1.40 | 1.21 | 1.09 | 1.04 |
| 4 | 1.08 | 1.16 | 1.14 | 1.09 | 1.36 | 1.30 | 1.66 | 1.64 | 1.38 | 1.21 | 1.08 | 1.04 |
| 5 | 1.08 | 1.18 | 1.14 | 1.08 | 1.34 | 1.31 | 1.86 | 1.64 | 1.38 | 1.21 | 1.07 | 1.04 |
| 6 | 1.09 | 1.36 | 1.14 | .95 | 1.35 | 1.34 | 1.76 | 1.66 | 1.38 | 1.21 | 1.07 | 1.03 |
| 7 | 1.09 | 1.25 | 1.14 | 1.15 | 1.38 | 1.42 | 1.70 | 1.69 | 1.35 | 1.19 | 1.07 | 1.01 |
| 8 | 1.09 | 1.20 | 1.11 | 1.20 | 1.40 | 1.47 | 1.66 | 1.69 | 1.32 | 1.19 | 1.07 | 1.01 |
| 9 | 1.09 | 1.21 | 1.12 | 1.18 | 1.40 | 1.50 | 1.68 | 1.84 | 1.42 | 1.19 | 1.07 | 1.02 |
| 10 | 1.09 | 1.38 | 1.11 | 1.18 | 1.40 | 1.46 | 1.70 | 1.78 | 1.35 | 1.17 | 1.07 | 1.03 |
| 11 | 1.10 | 1.25 | 1.12 | 1.18 | 1.34 | 1.44 | 1.71 | 1.71 | 1.34 | 1.16 | 1.07 | 1.03 |
| 12 | 1.09 | 1.20 | 1.14 | 1.18 | ..... | 1.42 | 1.72 | 1.69 | 1.34 | 1.15 | 1.06 | 1.03 |
| 13 | 1.09 | 1.16 | 1.14 | 1.29 | ..... | 1.42 | 1.74 | 1.64 | 1.32 | 1.14 | 1.04 | 1.04 |
| 14 | 1.09 | 1.15 | 1.19 | 1.46 | 1.35 | 1.42 | 1.76 | 1.61 | 1.32 | 1.11 | 1.01 | 1.04 |
| 15 | 1.09 | 1.15 | 1.28 | 1.55 | 1.38 | 1.42 | 1.70 | 1.60 | 1.30 | 1.10 | 1.01 | 1.04 |
| 16 | 1.09 | 1.15 | 1.18 | 1.40 | 1.45 | 1.41 | 1.68 | 1.58 | 1.30 | 1.10 | 1.00 | 1.04 |
| 17 | 1.09 | 1.14 | 1.20 | 1.34 | 1.39 | 1.40 | 1.66 | 1.55 | 1.28 | 1.09 | 1.00 | 1.04 |
| 18 | 1.09 | 1.14 | 1.20 | 1.70 | 1.39 | 1.50 | 1.64 | 1.72 | 1.28 | 1.11 | 1.00 | 1.04 |
| 19 | 1.09 | 1.18 | 1.18 | 1.65 | 1.38 | 1.49 | 1.64 | 1.62 | 1.28 | 1.11 | .99 | 1.03 |
| 20 | 1.09 | 1.22 | 1.18 | 1.45 | 1.34 | 1.50 | 1.65 | 1.60 | 1.25 | 1.11 | .99 | 1.03 |
| 21 | 1.11 | 1.18 | 1.18 | 1.38 | 1.32 | 1.50 | 1.66 | 1.56 | 1.24 | 1.11 | .99 | 1.03 |
| 22 | 1.11 | 1.15 | 1.18 | 1.40 | 1.32 | 1.54 | 1.69 | 1.53 | 1.25 | 1.14 | .99 | 1.03 |
| 23 | 1.20 | 1.14 | 1.18 | 1.34 | 1.32 | 1.50 | 1.76 | 1.51 | 1.25 | 1.22 | 1.02 | 1.04 |
| 24 | 1.14 | 1.14 | 1.14 | 1.34 | 1.32 | 1.46 | 1.78 | 1.49 | 1.26 | 1.20 | 1.09 | 1.04 |
| 25 | 1.15 | 1.14 | 1.14 | 1.36 | 1.31 | 1.40 | 1.79 | 1.46 | 1.27 | 1.35 | 1.06 | 1.04 |
| 26 | 1.15 | 1.14 | 1.14 | 1.36 | 1.31 | 1.40 | 1.81 | 1.44 | 1.26 | 1.16 | 1.06 | 1.04 |
| 27 | 1.15 | 1.10 | 1.14 | 1.38 | 1.31 | 1.40 | 1.81 | 1.45 | 1.31 | 1.14 | 1.04 | 1.04 |
| 28 | 1.18 | 1.10 | 1.14 | 1.40 | 1.29 | 1.42 | 1.79 | 1.59 | 1.26 | 1.12 | 1.04 | 1.04 |
| 29 | 1.20 | 1.12 | 1.22 | 1.41 | ..... | 1.52 | 1.74 | 1.54 | 1.23 | 1.12 | 1.04 | 1.04 |
| 30 | 1.18 | 1.10 | 1.28 | 1.41 | ..... | 1.62 | 1.71 | 1.48 | 1.23 | 1.11 | 1.04 | 1.04 |
| 31 | 1.14 | ..... | 1.20 | 1.41 | ..... | 1.69 | ..... | 1.45 | ..... | 1.09 | 1.04 | ..... |

*Daily discharge, in second-feet, of South Fork of Mokelumne River near Railroad Flat, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 6 | 6 | 9 | 22 | 13 | 62 | 47 | 27 | 10 | 5.5 | 4.5 |
| 2 | 5.5 | 6 | 7 | 7.5 | 22 | 13 | 53 | 44 | 26 | 10 | 5.5 | 4.5 |
| 3 | 5 | 6 | 7.5 | 6.5 | 20 | 13 | 46 | 44 | 21 | 8.5 | 5.5 | 4.5 |
| 4 | 5 | 7 | 6.5 | 6 | 18 | 14 | 47 | 44 | 20 | 8.5 | 5 | 4.5 |
| 5 | 5 | 7.5 | 6.5 | 6 | 17 | 15 | 71 | 44 | 20 | 8.5 | 5 | 4.5 |
| 6 | 5.5 | 18 | 6.5 | 6 | 18 | 17 | 58 | 47 | 20 | 8.5 | 5 | 4.5 |
| 7 | 5.5 | 11 | 6.5 | 7 | 20 | 23 | 51 | 50 | 18 | 8 | 5 | 4 |
| 8 | 5.5 | 8 | 6 | 8 | 21 | 27 | 47 | 50 | 15 | 8 | 5 | 4 |
| 9 | 5.5 | 8.5 | 6 | 7.5 | 21 | 30 | 49 | 68 | 23 | 8 | 5 | 4.5 |
| 10 | 5.5 | 20 | 6 | 7.5 | 21 | 26 | 51 | 58 | 18 | 7 | 5 | 4.5 |
| 11 | 5.5 | 11 | 6 | 7.5 | 17 | 25 | 52 | 52 | 17 | 7 | 5 | 4.5 |
| 12 | 5.5 | 8 | 6.5 | 7.5 | 17 | 23 | 53 | 50 | 17 | 7 | 5 | 4.5 |
| 13 | 5.5 | 7 | 6.5 | 13 | 17 | 23 | 56 | 44 | 15 | 6.5 | 4.5 | 4.5 |
| 14 | 5.5 | 7 | 8 | 26 | 18 | 23 | 58 | 41 | 15 | 6 | 4 | 4.5 |
| 15 | 5.5 | 7 | 13 | 35 | 20 | 23 | 51 | 40 | 14 | 5.5 | 4 | 4.5 |
| 16 | 5.5 | 7 | 7.5 | 21 | 26 | 22 | 49 | 38 | 14 | 5.5 | 4 | 4.5 |
| 17 | 5.5 | 6.5 | 8 | 17 | 20 | 21 | 47 | 35 | 13 | 5.5 | 4 | 4.5 |
| 18 | 5.5 | 6.5 | 8 | 51 | 20 | 30 | 44 | 53 | 13 | 6 | 4 | 4.5 |
| 19 | 5.5 | 7.5 | 7.5 | 46 | 20 | 29 | 44 | 42 | 13 | 6 | 4 | 4.5 |
| 20 | 5.5 | 9 | 7.5 | 26 | 17 | 30 | 46 | 40 | 11 | 6 | 4 | 4.5 |
| 21 | 6 | 7.5 | 7.5 | 20 | 15 | 30 | 47 | 36 | 10 | 6 | 4 | 4.5 |
| 22 | 6 | 7 | 7.5 | 21 | 15 | 34 | 50 | 33 | 11 | 6.5 | 4 | 4.5 |
| 23 | 8 | 6.5 | 7.5 | 17 | 15 | 30 | 58 | 31 | 11 | 9 | 4.5 | 4.5 |
| 24 | 6.5 | 6.5 | 6.5 | 17 | 15 | 26 | 61 | 29 | 12 | 8 | 5.5 | 4.5 |
| 25 | 7 | 6.5 | 6.5 | 18 | 15 | 21 | 62 | 26 | 12 | 18 | 5 | 4.5 |
| 26 | 7 | 6.5 | 6.5 | 18 | 15 | 21 | 64 | 25 | 12 | 7 | 5 | 4.5 |
| 27 | 7 | 5.5 | 6.5 | 20 | 15 | 21 | 64 | 26 | 15 | 6.5 | 4.5 | 4.5 |
| 28 | 7.5 | 5.5 | 6.5 | 21 | 13 | 23 | 62 | 39 | 12 | 6 | 4.5 | 4.5 |
| 29 | 8 | 6 | 9 | 22 | ..... | 32 | 56 | 34 | 10 | 6 | 4.5 | 4.5 |
| 30 | 7.5 | 5.5 | 13 | 22 | ..... | 42 | 52 | 28 | 10 | 6 | 4.5 | 4.5 |
| 31 | 6.5 | ..... | 8 | 22 | ..... | 50 | ..... | 26 | ..... | 5.5 | 4.5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge estimated Jan. 4–6, on account of ice; interpolated Feb. 12 and 13.

*Monthly discharge of South Fork of Mokelumne River near Railroad Flat, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 8 | 5 | 5.97 | 367 | C. |
| November | 20 | 5.5 | 7.92 | 471 | C. |
| December | 13 | 6 | 7.35 | 452 | C. |
| January | 51 | 6 | 17.4 | 1,070 | B. |
| February | 26 | 13 | 18.2 | 1,010 | B. |
| March | 50 | 13 | 24.8 | 1,520 | B. |
| April | 71 | 44 | 53.7 | 3,200 | A. |
| May | 68 | 25 | 40.8 | 2,510 | A. |
| June | 27 | 10 | 15.5 | 922 | B. |
| July | 18 | 5.5 | 7.44 | 457 | C. |
| August | 5.5 | 4 | 4.66 | 287 | C. |
| September | 4.5 | 4 | 4.47 | 266 | C. |
| The year | 71 | 4 | 17.3 | 12,500 | |

### LICKING FORK OF MOKELUMNE RIVER NEAR RAILROAD FLAT, CAL.

LOCATION.—In the E. ½ SE. ¼ sec. 26, T. 6 N., R. 14 E., at Mokelumne forest ranger station, 100 feet above mouth of Big Canyon Creek, and 6½ miles east of Railroad Flat. Licking Fork joins South Fork 6 miles below the station.

RECORDS AVAILABLE.—October 23, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on left bank 300 feet above the ranger station.

CHANNEL.—Bowlders and gravel; rough.

DISCHARGE MEASUREMENTS.—Made from foot log near gage or by wading.

DIVERSIONS.—An irrigation ditch, with a capacity of 1 second-foot, heads above the station.

ACCURACY.—Rating curve fairly well defined; results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Licking Fork of Mokelumne River near Railroad Flat, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 26 | R. C. Rice | 0.59 | 2.1 | Apr. 12 | Lasley Lee | 1.03 | 14 |
| Apr. 11 | Lasley Lee | .99 | 12 | | | | |

*Daily gage height, in feet, of Licking Fork of Mokelumne River near Railroad Flat, Cal., for the year ending Sept. 30, 1913.*

[J. E. Elliott, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.51 | 0.56 | 0.79 | | | 0.85 | | 0.40 | | 0.30 |
| 2 | | | .51 | .56 | | | | .83 | | .40 | | .31 |
| 3 | | | .51 | .52 | | | | .82 | | .40 | 0.30 | .33 |
| 4 | | 0.64 | .51 | .52 | | | 0.87 | .81 | | .40 | .30 | .33 |
| 5 | | .66 | .51 | .50 | .78 | | 1.10 | | 0.52 | .40 | .30 | .33 |
| 6 | | .68 | .51 | | .78 | 0.70 | 1.07 | .71 | .52 | .40 | .30 | .33 |
| 7 | | | .51 | .61 | .77 | | 1.01 | .71 | .52 | .40 | .30 | .33 |
| 8 | | .58 | .51 | .61 | .79 | | .99 | .71 | .51 | .40 | .30 | .35 |
| 9 | | .52 | .51 | .64 | | | .97 | .79 | .51 | .40 | .30 | .35 |
| 10 | | .71 | .51 | .54 | | | .98 | .79 | .51 | .40 | .30 | .35 |
| 11 | | | .51 | .57 | | | 1.00 | | .51 | .40 | .30 | .35 |
| 12 | | | .51 | .61 | | | 1.03 | .69 | | .40 | .30 | .35 |
| 13 | | | .51 | .59 | | | 1.05 | .68 | | .40 | .30 | .35 |
| 14 | | | .51 | .68 | | | 1.02 | .65 | | .40 | .30 | .35 |
| 15 | | | .51 | .81 | | .66 | 1.00 | .63 | | .40 | .30 | .35 |
| 16 | | | .56 | .70 | | .66 | .98 | .59 | | .40 | .30 | .35 |
| 17 | | .52 | .59 | .71 | | .66 | .98 | .55 | | .40 | .30 | .35 |
| 18 | | .52 | .55 | .91 | | .71 | .98 | | | .40 | .30 | .37 |
| 19 | | .52 | .55 | .81 | .70 | | .98 | | | .40 | .30 | .37 |
| 20 | | .58 | | .71 | .70 | | .97 | | | .40 | .30 | .37 |
| 21 | | .56 | | .70 | .69 | | .97 | | | .40 | .30 | .37 |
| 22 | | .52 | | .70 | | | .99 | | | | .30 | .40 |
| 23 | | .52 | | .69 | .66 | | 1.00 | .53 | | | .30 | .40 |
| 24 | | .54 | | .70 | .66 | | 1.01 | .53 | | | .30 | .40 |
| 25 | | .56 | | .71 | .65 | | | .53 | | | .30 | .40 |
| 26 | 0.59 | .58 | .51 | .71 | .64 | | | .52 | | | .30 | .40 |
| 27 | | .52 | .51 | .74 | .64 | | 1.02 | .52 | | | .30 | .40 |
| 28 | | .51 | .51 | .76 | .64 | | 1.00 | .56 | | | .30 | .40 |
| 29 | | .51 | .51 | .79 | | | .98 | .53 | | | .30 | .41 |
| 30 | | .51 | | .79 | | | .88 | .52 | | | .30 | .41 |
| 31 | | | .55 | .79 | | | | | | | .30 | |

*Daily discharge, in second feet, of Licking Fork of Mokelumne River near Railroad Flat, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 3 | 1.5 | 2 | 6.5 | 3.5 | 8 | 8.5 | 2.5 | 0.7 | 0.3 | 0.3 |
| 2 | | 3 | 1.5 | 2 | 6.5 | 3.5 | 7 | 8 | 2.5 | .7 | .3 | .3 |
| 3 | | 3 | 1.5 | 1.5 | 6.5 | 3.5 | 7 | 7.5 | 2 | .7 | .3 | .4 |
| 4 | | 3.5 | 1.5 | 1.5 | 6.5 | 4 | 9 | 7 | 2 | .7 | .3 | .4 |
| 5 | | 4 | 1.5 | 1.5 | 6.5 | 4 | 16 | 6 | 2 | .7 | .3 | .4 |
| 6 | | 4.5 | 1.5 | 2 | 6.5 | 4.5 | 15 | 5 | 2 | .7 | .3 | .4 |
| 7 | | 3.5 | 1.5 | 3 | 6 | 5 | 13 | 5 | 2 | .7 | .3 | .4 |
| 8 | | 2.5 | 1.5 | 3 | 6.5 | 6 | 13 | 5 | 1.5 | .7 | .3 | .5 |
| 9 | | 1.5 | 1.5 | 3.5 | 6.5 | 7 | 12 | 6.5 | 1.5 | .7 | .3 | .5 |
| 10 | | 5 | 1.5 | 2 | 6.5 | 5 | 12 | 6.5 | 1.5 | .7 | .3 | .5 |
| 11 | | 3 | 1.5 | 2.5 | 6 | 5 | 13 | 5.5 | 1.5 | .7 | .3 | .5 |
| 12 | | 2 | 1.5 | 3 | 6 | 4 | 14 | 4.5 | 1.5 | .7 | .3 | .5 |
| 13 | | 1.5 | 1.5 | 2.5 | 5.5 | 4 | 15 | 4.5 | 1.5 | .7 | .3 | .5 |
| 14 | | 1.5 | 1.5 | 4.5 | 5.5 | 4 | 14 | 3.5 | 1.5 | .7 | .3 | .5 |
| 15 | | 1.5 | 1.5 | 7 | 5 | 4 | 13 | 3.5 | 1.5 | .7 | .3 | .5 |
| 16 | | 1.5 | 2 | 4.5 | 5 | 4 | 12 | 2.5 | 1 | .7 | .3 | .5 |
| 17 | | 1.5 | 2.5 | 5 | 4.5 | 4 | 12 | 2 | 1 | .7 | .3 | .5 |
| 18 | | 1.5 | 2 | 10 | 4.5 | 5 | 12 | 4 | 1 | .7 | .3 | .6 |
| 19 | | 1.5 | 2 | 7 | 4.5 | 5 | 12 | 3 | 1 | .7 | .3 | .6 |
| 20 | | 2.5 | 2 | 5 | 4.5 | 5 | 12 | 3 | 1 | .7 | .3 | .6 |
| 21 | | 2 | 2 | 4.5 | 4.5 | 5 | 12 | 2 | .9 | .7 | .3 | .6 |
| 22 | | 1.5 | 2 | 4.5 | 4 | 6 | 13 | 2 | .9 | .7 | .3 | .7 |
| 23 | | 1.5 | 2 | 4.5 | 4 | 5 | 13 | 2 | .9 | .8 | .3 | .7 |
| 24 | | 2 | 1.5 | 4.5 | 4 | 4 | 13 | 2 | .9 | .7 | .3 | .7 |
| 25 | | 2 | 1.5 | 5 | 3.5 | 3 | 13 | 2 | .8 | 1.0 | .3 | .7 |
| 26 | | 2.5 | 2.5 | 1.5 | 5 | 3.5 | 3 | 14 | 2 | .8 | .5 | .3 | .7 |
| 27 | | 1.5 | 1.5 | 5.5 | 3.5 | 3 | 14 | 2 | .8 | .5 | .3 | .7 |
| 28 | | 1.5 | 1.5 | 6 | 3.5 | 4 | 13 | 2 | .8 | .4 | .3 | .7 |
| 29 | | 1.5 | 1.5 | 6.5 | | 5 | 12 | 2 | .7 | .4 | .3 | .7 |
| 30 | | 1.5 | 2 | 6.5 | | 6 | 9 | 1.5 | .7 | .3 | .3 | .7 |
| 31 | | | 2 | 6.5 | | 7 | | 1.5 | | .3 | .3 | |

NOTE.—For days when gage was not read, discharge estimated by comparison with that of South Fork of Mokelumne River near Railroad Flat.

*Monthly discharge of Licking Fork of Mokelumne River near Railroad Flat, Cal., for the year ended Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | | | 2.0 | 123 | D. |
| November | 4.5 | 1.5 | 2.30 | 137 | D. |
| December | 2.5 | 1.5 | 1.68 | 103 | D. |
| January | 10 | 1.5 | 4.26 | 262 | C. |
| February | 6.5 | 3.5 | 5.21 | 289 | B. |
| March | | | 4.55 | 280 | C. |
| April | 16 | | 12.2 | 726 | A. |
| May | 8.5 | 1.5 | 3.94 | 242 | C. |
| June | | | 1.34 | 80 | D. |
| July | | | .65 | 40 | |
| August | .3 | .3 | .3 | 18 | |
| September | .7 | .3 | .54 | 32 | |
| The year | | | 3.22 | 2,330 | |

NOTE.—See footnote to table of daily discharge.

### NORTH FORK OF COSUMNES RIVER NEAR EL DORADO, CAL.

LOCATION.—In sec. 23, T. 9 N., R. 10 E., at suspension footbridge at Celio's ranch,[1] about 5 miles south of El Dorado and 4 miles above junction with Middle Fork. Martinez Creek enters about 1½ miles above the station.

RECORDS AVAILABLE.—August 13, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in three sections on right bank at the bridge.

CHANNEL.—Gravel and solid rock; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—The J. J. Crawford ditch diverts from Camp Creek, above the station. This is a small ditch and the water is used for irrigation below Placerville.

ACCURACY.—Rating curve well defined; results good.

The following discharge measurement was made by E. C. Murphy: January 18, 1913: Gage height, 3.58 feet; discharge, 51 second-feet. There was ice at gage and along banks at section.

*Daily gage height, in feet, of North Fork of Cosumnes River near El Dorado, Cal., for the year ended Sept. 30, 1913.*

[James Yates, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.15 | 3.30 | ..... | 3.70 | 3.90 | 3.72 | 4.8 | 4.8 | 4.25 | 3.40 | 3.10 | ..... |
| 2 | 3.15 | 3.30 | 3.40 | ..... | 3.90 | 3.70 | 4.9 | 4.8 | 4.30 | 3.35 | 3.10 | ..... |
| 3 | 3.15 | ..... | 3.40 | 3.70 | 3.90 | 3.70 | 4.8 | 4.7 | 4.20 | ..... | 3.10 | ..... |
| 4 | ..... | 3.30 | ..... | 3.80 | 3.85 | 3.70 | 5.1 | 4.75 | 4.15 | 3.30 | 3.08 | ..... |
| 5 | 3.12 | 3.40 | 3.45 | 3.80 | ..... | 3.80 | 5.7 | 4.8 | 4.10 | 3.30 | 3.05 | ..... |
| 6 | ..... | 3.70 | 3.38 | 3.60 | 3.85 | 3.82 | 5.2 | 4.9 | ..... | 3.25 | 3.05 | ..... |
| 7 | 3.12 | 4.5 | 3.40 | 3.30 | 3.80 | ..... | 5.1 | 5.05 | 4.00 | ..... | 3.02 | ..... |
| 8 | 3.15 | 3.70 | 3.40 | 3.58 | 3.85 | 4.00 | 5.0 | 5.0 | 3.92 | 3.25 | 3.00 | ..... |
| 9 | 3.15 | 3.60 | ..... | 3.55 | 3.90 | 4.00 | 5.0 | 5.2 | 3.90 | 3.25 | 3.00 | ..... |
| 10 | 3.18 | 4.40 | 3.38 | ..... | ..... | 4.10 | 5.05 | 5.1 | 3.90 | 3.18 | 3.00 | ..... |
| 11 | 3.18 | 3.70 | 3.35 | 3.50 | 3.90 | 4.15 | 5.05 | 5.05 | 3.82 | 3.15 | ..... | ..... |
| 12 | 3.18 | 3.65 | 3.40 | 3.50 | 3.90 | ..... | 5.1 | 4.9 | 3.80 | 3.15 | ..... | ..... |
| 13 | 3.18 | 3.65 | 3.38 | 3.50 | 3.90 | 4.10 | 5.35 | 4.8 | 3.75 | ..... | ..... | ..... |
| 14 | 3.18 | 3.50 | 3.35 | 4.00 | 3.90 | 4.00 | ..... | 4.7 | 3.70 | 3.10 | ..... | ..... |
| 15 | 3.15 | 3.50 | 3.90 | 4.85 | 3.92 | 3.98 | 5.3 | 4.7 | 3.68 | 3.10 | ..... | ..... |
| 16 | 3.15 | 3.50 | 3.80 | 5.1 | 3.95 | ..... | 5.05 | 4.7 | 3.60 | 3.10 | ..... | ..... |
| 17 | 3.15 | 3.48 | 3.90 | 4.20 | 4.00 | 3.95 | 5.0 | 4.7 | 3.60 | 3.10 | ..... | ..... |
| 18 | 3.15 | 3.45 | 3.72 | 5.6 | 4.00 | 4.20 | 5.05 | 5.5 | 3.60 | 3.10 | ..... | ..... |
| 19 | 3.15 | 3.45 | 3.65 | 5.15 | 3.98 | 4.15 | 5.05 | 4.9 | ..... | 3.10 | ..... | ..... |
| 20 | 3.15 | 3.90 | ..... | ..... | 3.85 | 4.20 | 5.15 | 4.8 | 3.55 | 3.10 | 3.00 | 2.90 |
| 21 | 3.15 | ..... | 3.55 | 4.10 | 3 90 | 4.15 | 5.15 | 4.7 | 3.52 | 3.10 | ..... | ..... |
| 22 | 3.20 | 3.50 | 3.50 | 4.10 | ..... | 4.7 | 5.2 | 4.8 | ..... | 3.10 | ..... | ..... |
| 23 | 3.28 | 3.50 | 3.45 | 4.00 | 3.80 | 4.30 | 5.25 | 4.7 | 3.50 | 3.10 | ..... | ..... |
| 24 | 3.30 | 3 48 | ..... | ..... | 3 80 | 4.40 | 5.2 | 4.6 | 3.48 | 3.18 | ..... | ..... |
| 25 | 3.30 | 3.45 | 3.57 | 4.00 | 3.80 | 4.25 | 5.3 | 4.5 | 3.50 | 3.18 | ..... | 2.85 |
| 26 | 3.28 | ..... | 3.40 | 4.00 | 3.80 | 4.18 | 5.4 | 4.5 | 3.42 | 3.28 | ..... | ..... |
| 27 | ..... | 3.42 | ..... | 3.95 | 3.80 | 4.22 | 5.6 | 4.48 | 3.45 | 3 25 | ..... | ..... |
| 28 | 3.30 | ..... | 3.50 | 3.95 | 3.75 | 4.20 | 5.3 | 4.7 | 3.50 | 3.20 | ..... | ..... |
| 29 | 3.30 | 3.40 | 3.50 | 3.92 | ..... | 4.20 | 5.1 | 4.55 | 3 45 | 3.15 | ..... | ..... |
| 30 | 3.40 | 3.40 | 3.50 | ..... | ..... | 4.28 | 4.95 | ..... | 3.40 | 3.15 | 2.95 | 2.90 |
| 31 | 3.35 | ..... | 3.60 | 3.90 | ..... | 4.25 | ..... | 4.30 | ..... | 3.12 | ..... | ..... |

[1] "Kings Store" on U. S. Geological Survey map of Placerville quadrangle.

*Daily discharge, in second-feet, of North Fork of Cosumnes River near El Dorado, Cal., for the year ended Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 23 | 30 | 60 | 85 | 62 | 266 | 266 | 140 | 30 | 11 | 4.5 |
| 2 | 14 | 23 | 30 | 60 | 85 | 60 | 293 | 266 | 149 | 26 | 11 | 4.5 |
| 3 | 14 | 23 | 30 | 60 | 85 | 60 | 266 | 240 | 130 | 24 | 11 | 4.5 |
| 4 | 13 | 23 | 32 | 72 | 78 | 60 | 352 | 253 | 122 | 23 | 10 | 4.5 |
| 5 | 12 | 30 | 34 | 72 | 78 | 72 | 568 | 266 | 114 | 23 | 8.2 | 4.5 |
| 6 | 12 | 60 | 29 | 49 | 78 | 75 | 384 | 293 | 106 | 20 | 8.2 | 4 |
| 7 | 12 | 191 | 30 | 23 | 72 | 87 | 352 | 337 | 99 | 20 | 6.6 | 4 |
| 8 | 14 | 60 | 30 | 47 | 78 | 99 | 322 | 322 | 88 | 20 | 5.5 | 4 |
| 9 | 14 | 49 | 30 | 44 | 85 | 99 | 322 | 384 | 85 | 20 | 5.5 | 4 |
| 10 | 16 | 169 | 29 | 42 | 85 | 114 | 337 | 352 | 85 | 16 | 5.5 | 4 |
| 11 | 16 | 60 | 26 | 39 | 85 | 122 | 337 | 337 | 75 | 14 | 5.5 | 4 |
| 12 | 16 | 54 | 30 | 39 | 85 | 118 | 352 | 293 | 72 | 14 | 5.5 | 4 |
| 13 | 16 | 54 | 29 | 39 | 85 | 114 | 436 | 266 | 66 | 12 | 5.5 | 4 |
| 14 | 16 | 39 | 26 | 99 | 85 | 99 | 427 | 240 | 60 | 11 | 5.5 | 3.5 |
| 15 | 14 | 39 | 85 | 280 | 88 | 96 | 418 | 240 | 58 | 11 | 5.5 | 3.5 |
| 16 | 14 | 39 | 72 | 352 | 92 | 94 | 337 | 240 | 49 | 11 | 5.5 | 3.5 |
| 17 | 14 | 37 | 85 | 130 | 99 | 92 | 322 | 240 | 49 | 11 | 5.5 | 3.5 |
| 18 | 14 | 34 | 62 | 528 | 99 | 130 | 337 | 490 | 49 | 11 | 5.5 | 3.5 |
| 19 | 14 | 34 | 54 | 368 | 96 | 122 | 337 | 293 | 46 | 11 | 5.5 | 3.5 |
| 20 | 14 | 85 | 49 | 241 | 78 | 130 | 368 | 266 | 44 | 11 | 5.5 | 3.5 |
| 21 | 14 | 62 | 44 | 114 | 85 | 122 | 368 | 240 | 41 | 11 | 5.5 | 3.5 |
| 22 | 17 | 39 | 39 | 114 | 78 | 240 | 384 | 266 | 40 | 11 | 5.5 | 3 |
| 23 | 22 | 39 | 34 | 99 | 72 | 149 | 401 | 240 | 39 | 11 | 5.5 | 3 |
| 24 | 23 | 37 | 36 | 99 | 72 | 169 | 384 | 215 | 37 | 16 | 5 | 2.5 |
| 25 | 23 | 34 | 39 | 99 | 72 | 140 | 418 | 191 | 39 | 16 | 5 | 2.5 |
| 26 | 22 | 33 | 30 | 99 | 72 | 127 | 454 | 191 | 32 | 22 | 5 | 2.5 |
| 27 | 22 | 32 | 34 | 92 | 72 | 134 | 528 | 187 | 34 | 20 | 4.5 | 3 |
| 28 | 23 | 31 | 39 | 92 | 66 | 130 | 384 | 240 | 39 | 17 | 4.5 | 3 |
| 29 | 23 | 30 | 39 | 88 | ..... | 130 | 352 | 203 | 34 | 14 | 4.5 | 3.5 |
| 30 | 30 | 30 | 39 | 86 | ..... | 145 | 308 | 176 | 30 | 14 | 4.5 | 3.5 |
| 31 | 26 | ..... | 49 | 85 | ..... | 140 | ..... | 149 | ..... | 12 | 4.5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days for which gage heights are not recorded.

*Monthly discharge of North Fork of Cosumnes River near El Dorado, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 30 | 12 | 17.0 | 1,040 | B. |
| November | 191 | 23 | 49.8 | 2,960 | B. |
| December | 85 | 26 | 40.1 | 2,470 | B. |
| January | 528 | 23 | 120 | 7,380 | A. |
| February | 99 | 66 | 81.8 | 4,540 | A. |
| March | 240 | 60 | 114 | 7,010 | A. |
| April | 568 | 266 | 370 | 22,000 | A. |
| May | 490 | 149 | 264 | 16,200 | A. |
| June | 149 | 30 | 68.4 | 4,070 | B. |
| July | 30 | 11 | 16.2 | 996 | B. |
| August | 11 | 4.5 | 6.18 | 380 | C. |
| September | [a] 4.5 | 2.5 | 3.63 | 216 | C. |
| The year | 568 | 2.5 | 95.7 | 69,300 | |

[a] Estimated.

### COSUMNES RIVER AT MICHIGAN BAR, CAL.

LOCATION.—In the NW. ¼ SE. ¼ sec. 36, T. 8 N., R. 8 E., at highway bridge at Michigan Bar, 5½ miles southwest of Latrobe. The North and Middle forks unite 12 miles above the station.

RECORDS AVAILABLE.—October 20, 1907, to September 30, 1913.

DRAINAGE AREA.—524 square miles.

GAGE.—Vertical staff on downstream end of bridge pier, near left bank.

CHANNEL.—Sand, gravel, and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Douglas and Enterprise ditches, with a combined capacity of about 50 second-feet, divert water from the Middle and South forks for power, domestic, and irrigation purposes at Plymouth and vicinity. Slug Gulch ditch, with a capacity of 7 or 8 second-feet, also diverts water from the Middle Fork when prior appropriations permit. Michigan Bar canal, which has a capacity of about 50 second-feet, heads on the main Cosumnes at Musicdale Creek. No record is available showing the amount of water that is diverted.

ACCURACY.—Conditions favorable for making good discharge measurements at all stages; results are excellent.

*Discharge measurements of Cosumnes River at Michigan Bar, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 7 | E. C. Murphy | 2.48 | 37 | Apr. 21 | E. C. Murphy | 4.06 | 641 |
| Feb. 17 | do | 3.29 | 202 | Aug. 14 | Charles Leidl | 1.92 | 2.2 |

*Daily gage height, in feet, of Cosumnes River at Michigan Bar, Cal., for the year ending Sept. 30, 1915.*

[C. B. Ruman, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.18 | 2.50 | 2.65 | 2.82 | 3.20 | 3.00 | 3.85 | 3.85 | 3.40 | 2.54 | 2.10 | 1.90 |
| 2 | 2.18 | 2.48 | 2.65 | 2.90 | 3.20 | 3.00 | 3.98 | 3.80 | 3.45 | 2.50 | 2.10 | 1.90 |
| 3 | 2.18 | 2.45 | 2.65 | 2.84 | 3.20 | 3.00 | 3.90 | 3.80 | 3.40 | 2.46 | 2.10 | 1.90 |
| 4 | 2.18 | 2.50 | 2.65 | 2.80 | 3.18 | 3.00 | 3.95 | 3.82 | 3.40 | 2.40 | 2.10 | 1.90 |
| 5 | 2.18 | 2.50 | 2.65 | 2.70 | 3.16 | 3.00 | 4.1 | 3.80 | 3.32 | 2.40 | 2.06 | 1.90 |
| 6 | 2.18 | 2.55 | 2.66 | 2.52 | 3.15 | 3.05 | 4.2 | 3.82 | 3.30 | 2.38 | 2.00 | 1.90 |
| 7 | 2.18 | 3.25 | 2.60 | 2.46 | 3.15 | 3.12 | 4.05 | 3.98 | 3.22 | 2.30 | 2.00 | 1.90 |
| 8 | 2.19 | 3.20 | 2.60 | 2.52 | 3.15 | 3.22 | 4.0 | 3.95 | 3.20 | 2.30 | 1.99 | 1.85 |
| 9 | 2.20 | 2.94 | 2.60 | 2.90 | 3.15 | 3.30 | 3.98 | 4.05 | 3.12 | 2.30 | 1.95 | 1.85 |
| 10 | 2.20 | 3.20 | 2.60 | 2.81 | 3.20 | 3.34 | 3.95 | 4.15 | 3.14 | 2.26 | 1.95 | 1.85 |
| 11 | 2.20 | 3.32 | 2.60 | 2.75 | 3.20 | 3.40 | 4.05 | 4.0 | 3.12 | 2.22 | 1.95 | 1.85 |
| 12 | 2.25 | 3.05 | 2.60 | 2.75 | 3.20 | 3.40 | 4.0 | 3.90 | 3.08 | 2.12 | 1.95 | 1.85 |
| 13 | 2.25 | 2.90 | 2.60 | 2.80 | 3.20 | 3.38 | 4.15 | 3.80 | 3.00 | 2.10 | 1.95 | 1.85 |
| 14 | 2.25 | 2.82 | 2.60 | 2.95 | 3.20 | 3.30 | 4.2 | 3.80 | 2.98 | 2.10 | 1.95 | 1.85 |
| 15 | 2.22 | 2.80 | 2.72 | 4.45 | 3.20 | 3.22 | 4.25 | 3.75 | 2.98 | 2.10 | 1.95 | 1.85 |
| 16 | 2.20 | 2.74 | 3.14 | 4.55 | 3.20 | 3.20 | 4.1 | 3.70 | 2.89 | 2.07 | 1.96 | 1.85 |
| 17 | 2.20 | 2.70 | 3.18 | 4.05 | 3.28 | 3.28 | 4.0 | 3.70 | 2.80 | 2.05 | 1.98 | 1.80 |
| 18 | 2.20 | 2.70 | 3.08 | 4.45 | 3.30 | 3.34 | 4.0 | 3.89 | 2.80 | 2.05 | 1.98 | 1.80 |
| 19 | 2.20 | 2.70 | 2.90 | 4.65 | 3.30 | 3.40 | 3.98 | 4.0 | 2.72 | 2.01 | 1.98 | 1.80 |
| 20 | 2.20 | 2.78 | 2.90 | 3.95 | 3.25 | 3.45 | 3.92 | 3.84 | 2.70 | 2.00 | 1.95 | 1.80 |
| 21 | 2.20 | 3.02 | 2.84 | 3.65 | 3.25 | 3.40 | 4.0 | 3.80 | 2.72 | 2.00 | 1.95 | 1.80 |
| 22 | 2.20 | 2.90 | 2.79 | 3.50 | 3.18 | 3.70 | 4.05 | 3.71 | 2.69 | 2.04 | 1.95 | 1.80 |
| 23 | 2.38 | 2.78 | 2.70 | 3.50 | 3.10 | 3.75 | 4.1 | 3.70 | 2.60 | 2.08 | 1.95 | 1.80 |
| 24 | 2.40 | 2.75 | 2.78 | 3.40 | 3.08 | 3.61 | 4.1 | 3.70 | 2.60 | 2.09 | 1.95 | 1.78 |
| 25 | 2.50 | 2.70 | 2.75 | 3.30 | 3.12 | 3.60 | 4.15 | 3.68 | 2.60 | 2.10 | 1.94 | 1.80 |
| 26 | 2.50 | 2.70 | 2.70 | 3.30 | 3.10 | 3.50 | 4.2 | 3.62 | 2.60 | 2.10 | 1.90 | 1.80 |
| 27 | 2.44 | 2.70 | 2.60 | 3.30 | 3.10 | 3.40 | 4.25 | 3.56 | 2.60 | 2.10 | 1.90 | 1.80 |
| 28 | 2.40 | 2.70 | 2.60 | 3.30 | 3.08 | 3.44 | 4.2 | 3.72 | 2.60 | 2.26 | 1.90 | 1.80 |
| 29 | 2.45 | 2.65 | 2.70 | 3.30 | ..... | 3.45 | 4.15 | 3.69 | 2.60 | 2.22 | 1.90 | 1.80 |
| 30 | 2.48 | 2.65 | 2.70 | 3.25 | ..... | 3.46 | 3.98 | 3.54 | 2.60 | 2.20 | 1.90 | 1.85 |
| 31 | 2.54 | ..... | 2.78 | 3.21 | ..... | 3.65 | ..... | 3.46 | ..... | 2.17 | 1.90 | ..... |

*Daily discharge, in second-feet, of Cosumnes River at Michigan Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 35 | 53 | 79 | 175 | 120 | 492 | 492 | 250 | 39 | 8 | 3 |
| 2 | 11 | 33 | 53 | 95 | 175 | 120 | 581 | 460 | 272 | 35 | 8 | 3 |
| 3 | 11 | 30 | 53 | 83 | 175 | 120 | 525 | 460 | 250 | 31 | 8 | 3 |
| 4 | 11 | 35 | 53 | 75 | 169 | 120 | 560 | 473 | 250 | 26 | 8 | 3 |
| 5 | 11 | 35 | 53 | 60 | 163 | 120 | 675 | 460 | 218 | 26 | 7 | 3 |
| 6 | 11 | 40 | 54 | 37 | 160 | 132 | 760 | 473 | 210 | 24 | 5 | 3 |
| 7 | 11 | 192 | 46 | 31 | 160 | 151 | 635 | 581 | 182 | 18 | 5 | 3 |
| 8 | 12 | 175 | 46 | 37 | 160 | 182 | 595 | 560 | 175 | 18 | 5 | 2 |
| 9 | 12 | 105 | 46 | 95 | 160 | 210 | 581 | 635 | 151 | 18 | 4 | 2 |
| 10 | 12 | 175 | 46 | 77 | 175 | 226 | 560 | 718 | 157 | 16 | 4 | 2 |
| 11 | 12 | 218 | 46 | 68 | 175 | 250 | 635 | 595 | 151 | 13 | 4 | 2 |
| 12 | 15 | 132 | 46 | 68 | 175 | 250 | 595 | 525 | 140 | 9 | 4 | 2 |
| 13 | 15 | 95 | 46 | 75 | 175 | 242 | 718 | 460 | 120 | 8 | 4 | 2 |
| 14 | 15 | 79 | 46 | 108 | 175 | 210 | 760 | 460 | 115 | 8 | 4 | 2 |
| 15 | 13 | 75 | 63 | 1,000 | 175 | 182 | 805 | 430 | 115 | 8 | 4 | 2 |
| 16 | 12 | 66 | 157 | 1,100 | 175 | 175 | 675 | 400 | 93 | 7 | 4 | 2 |
| 17 | 12 | 60 | 169 | 635 | 203 | 203 | 595 | 400 | 75 | 6 | 5 | 2 |
| 18 | 12 | 60 | 140 | 1,000 | 210 | 226 | 595 | 518 | 75 | 6 | 5 | 2 |
| 19 | 12 | 60 | 95 | 1,220 | 210 | 250 | 581 | 595 | 63 | 5 | 5 | 2 |
| 20 | 12 | 72 | 95 | 560 | 192 | 272 | 539 | 486 | 60 | 5 | 4 | 2 |
| 21 | 12 | 125 | 83 | 372 | 192 | 250 | 595 | 460 | 63 | 5 | 4 | 2 |
| 22 | 12 | 95 | 74 | 295 | 169 | 400 | 635 | 406 | 59 | 6 | 4 | 2 |
| 23 | 24 | 72 | 60 | 295 | 145 | 430 | 675 | 400 | 46 | 7 | 4 | 2 |
| 24 | 26 | 68 | 72 | 250 | 140 | 350 | 675 | 400 | 46 | 8 | 4 | 1 |
| 25 | 35 | 60 | 68 | 210 | 151 | 345 | 718 | 389 | 46 | 8 | 4 | 2 |
| 26 | 35 | 60 | 60 | 210 | 145 | 295 | 760 | 356 | 46 | 8 | 3 | 2 |
| 27 | 30 | 60 | 46 | 210 | 145 | 250 | 805 | 325 | 46 | 8 | 3 | 2 |
| 28 | 26 | 60 | 46 | 210 | 140 | 268 | 760 | 412 | 46 | 16 | 3 | 2 |
| 29 | 30 | 53 | 60 | 210 | ..... | 272 | 718 | 394 | 46 | 13 | 3 | 2 |
| 30 | 33 | 53 | 60 | 192 | ..... | 277 | 581 | 315 | 46 | 12 | 3 | 2 |
| 31 | 39 | ..... | 72 | 178 | ..... | 372 | ..... | 277 | ..... | 11 | 3 | ..... |

NOTE.—Discharge determined from a rating curve well defined above 30 second-feet.

*Monthly discharge of Cosumnes River at Michigan Bar, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 39 | 11 | 17.6 | 1,080 | C. |
| November | 218 | 30 | 82.6 | 4,920 | A. |
| December | 169 | 46 | 68.0 | 4,180 | A. |
| January | 1,220 | 31 | 295 | 18,100 | A. |
| February | 210 | 140 | 170 | 9,440 | A. |
| March | 430 | 120 | 235 | 14,400 | A. |
| April | 805 | 492 | 646 | 38,400 | A. |
| May | 718 | 277 | 462 | 28,400 | A. |
| June | 272 | 46 | 120 | 7,140 | A. |
| July | 39 | 5 | 13.8 | 848 | C. |
| August | 8 | 3 | 4.6 | 283 | D. |
| September | 3 | 1 | 2.2 | 131 | D. |
| The year | 1,220 | 1 | 176 | 127,000 | |

NOTE.—Maximum recorded gage height for the year: 5.0 feet; discharge, 1,700 second-feet.

### MIDDLE FORK OF COSUMNES RIVER NEAR FAIR PLAY, CAL.

LOCATION.—In the SW. ¼ sec. 18, T. 9 N., R. 12 E., one-fourth mile above highway bridge at Bakers Ford (Placerville quadrangle), on Fair Play to Pleasant Valley road, about 3½ miles northwest of Fair Play. Perry Creek enters one-half mile below gage.

RECORDS AVAILABLE.—February 13 to May 24, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff driven in river bed on left bank.

CHANNEL.—Small bowlders, gravel, and sand; fairly permanent.

DISCHARGE MEASUREMENTS.—Made by wading.

COOPERATION.—Discharge measurements and daily gage heights furnished by George S. Nickerson, Sacramento, Cal.

*Discharge measurements of Middle Fork of Cosumnes River near Fair Play, Cal., during the year ending Sept. 30, 1913.*

[Made by E. E. Bonnelle.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-feet.* |
| Feb. 13 | 0.48 | 52 | Mar. 23 | .66 | 94 |
| Mar. 9 | .70 | 108 | Apr. 27 | 1.45 | 382 |

*Daily gage height, in feet, and discharge, in second-feet, of Middle Fork of Cosumnes River near Fair Play, Cal., for the year ending Sept. 30, 1913.*

[William Becker, observer.]

| Day. | Mar. | | Apr. | | May. | | Day. | Mar. | | Apr. | | May. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | ..... | ..... | 1.20 | 280 | 1.02 | 210 | 16 | ..... | ..... | 1.00 | 203 | 1.00 | 203 |
| 2 | ..... | ..... | 1.00 | 203 | 1.00 | 203 | 17 | ..... | ..... | 1.10 | 240 | 1.00 | 203 |
| 3 | ..... | ..... | 1.00 | 203 | 1.05 | 222 | 18 | ..... | ..... | ..... | ..... | 1.18 | 272 |
| 4 | ..... | ..... | 1.05 | 222 | 1.08 | 233 | 19 | ..... | ..... | ..... | ..... | 1.15 | 260 |
| 5 | ..... | ..... | ..... | ..... | 1.10 | 240 | 20 | ..... | ..... | ..... | ..... | 1.08 | 233 |
| 6 | ..... | ..... | ..... | ..... | 1.20 | 280 | 21 | ..... | ..... | ..... | ..... | 1.02 | 210 |
| 7 | ..... | ..... | ..... | ..... | 1.20 | 280 | 22 | ..... | ..... | 1.20 | 280 | 1.01 | 207 |
| 8 | ..... | ..... | 1.05 | 222 | 1.22 | 288 | 23 | 0.66 | 96 | 1.30 | 320 | 1.00 | 203 |
| 9 | ..... | ..... | 1.05 | 222 | 1.20 | 280 | 24 | .62 | 85 | 1.35 | 340 | 1.00 | 203 |
| 10 | ..... | ..... | 1.20 | 280 | 1.22 | 288 | 25 | .50 | 56 | 1.40 | 360 | ..... | ..... |
| 11 | ..... | ..... | 1.20 | 280 | 1.02 | 210 | 26 | .45 | 46 | 1.50 | 402 | ..... | ..... |
| 12 | ..... | ..... | 1.25 | 300 | 1.10 | 240 | 27 | .60 | 80 | 1.45 | 381 | ..... | ..... |
| 13 | ..... | ..... | ..... | ..... | 1.02 | 210 | 28 | .60 | 80 | 1.32 | 328 | ..... | ..... |
| 14 | ..... | ..... | ..... | ..... | 1.00 | 203 | 29 | .60 | 80 | 1.20 | 280 | ..... | ..... |
| 15 | ..... | ..... | 1.10 | 240 | 1.00 | 203 | 30 | .80 | 137 | 1.08 | 233 | ..... | ..... |
| | | | | | | | 31 | 1.00 | 203 | ..... | ..... | ..... | ..... |

## SACRAMENTO RIVER BASIN.

### SACRAMENTO RIVER AT CASTELLA, CAL.

LOCATION.—In sec. 22, T. 38 N., R. 4 W., at the private highway bridge at Castella, about half a mile below the mouth of Castle Creek.

RECORDS AVAILABLE.—October 15, 1910, to September 30, 1913.

DRAINAGE AREA.—257 square miles.

GAGE.—Vertical staff on downstream end of bridge pier near right bank.

CHANNEL.—Small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge at Sweet Brier Camp, one-half mile below gage. This section is more satisfactory than that at upper bridge, where early measurements were made.

ACCURACY.—Rating curve fairly well defined; results good.

COOPERATION.—Gage-height record furnished by H. O. Wickes.

*Discharge measurements of Sacramento River at Castella, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Nov. 26 | Lasley Lee | 2.91 | 320 |
| Feb. 24 | G. H. Canfield | 3.25 | 508 |
| Sept. 2 | Lasley Lee | 2.52 | 203 |

*Daily gage height, in feet, of Sacramento River at Castella, Cal., for the year ending Sept. 30, 1913.*

[H. O. Wickes, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.5 | 2.6 | 2.85 | 3.0 | 3.25 | 3.0 | 4.1 | 3.85 | 3.8 | 2.85 | 2.55 | 2.5 |
| 2 | 2.5 | 2.6 | 2.8 | 3.0 | 3.3 | 3.0 | 4.05 | 3.8 | 3.8 | 2.8 | 2.55 | 2.5 |
| 3 | 2.5 | 2.6 | 2.8 | 2.95 | 3.25 | 3.1 | 3.95 | 3.8 | 3.75 | 2.8 | 2.55 | 2.5 |
| 4 | 2.5 | 2.6 | 2.8 | 2.9 | 3.15 | 3.15 | 4.8 | 4.0 | 3.7 | 2.75 | 2.55 | 2.5 |
| 5 | 2.5 | 3.05 | 2.8 | 2.9 | 3.1 | 3.2 | 5.8 | 4.1 | 3.6 | 2.75 | 2.55 | 2.5 |
| 6 | 2.5 | 4.2 | 2.8 | 2.85 | 3.15 | 3.4 | 4.8 | 4.3 | 3.55 | 2.7 | 2.55 | 2.5 |
| 7 | 2.5 | 3.4 | 2.8 | 2.8 | 3.2 | 3.5 | 4.45 | 4.45 | 3.55 | 2.7 | 2.55 | 2.5 |
| 8 | 2.5 | 3.0 | 2.8 | 2.8 | 3.3 | 3.6 | 4.25 | 4.5 | 3.55 | 2.65 | 2.55 | 2.5 |
| 9 | 2.5 | 6.0 | 2.75 | 2.8 | 3.3 | 3.75 | 4.25 | 5.5 | 3.5 | 2.65 | 2.55 | 2.5 |
| 10 | 2.5 | 4.25 | 2.75 | 2.8 | 3.3 | 3.9 | 4.25 | 5.0 | 3.45 | 2.65 | 2.55 | 2.5 |
| 11 | 2.5 | 3.6 | 2.75 | 2.8 | 3.35 | 4.0 | 3.9 | 4.7 | 3.4 | 2.6 | 2.55 | 2.5 |
| 12 | 2.5 | 3.4 | 2.75 | 2.85 | 3.35 | 3.85 | 4.6 | 4.5 | 3.35 | 2.6 | 2.55 | 2.5 |
| 13 | 2.5 | 3.25 | 2.75 | 2.9 | 3.4 | 3.7 | 4.9 | 4.35 | 3.3 | 2.6 | 2.55 | 2.5 |
| 14 | 2.5 | 4.2 | 3.0 | 3.0 | 3.4 | 3.55 | 4.6 | 4.2 | 3.2 | 2.6 | 2.55 | 2.5 |
| 15 | 2.5 | 3.75 | 3.5 | 3.0 | 3.5 | 3.5 | 4.3 | 4.25 | 3.1 | 2.6 | 2.55 | 2.5 |
| 16 | 2.5 | 3.4 | 3.4 | 3.0 | 3.5 | 3.45 | 4.1 | 4.25 | 3.1 | 2.6 | 2.55 | 2.5 |
| 17 | 2.5 | 3.3 | 3.3 | 3.05 | 3.75 | 3.5 | 4.1 | 4.3 | 3.1 | 2.6 | 2.5 | 2.5 |
| 18 | 2.5 | 3.2 | 3.25 | 3.95 | 3.75 | 3.5 | 4.2 | 4.45 | 3.1 | 2.6 | 2.5 | 2.5 |
| 19 | 2.5 | 3.15 | 3.2 | 3.5 | 3.55 | 3.5 | 4.25 | 4.35 | 3.05 | 2.6 | 2.5 | 2.5 |
| 20 | 2.5 | 3.2 | 3.05 | 3.25 | 3.45 | 3.5 | 4.2 | 4.2 | 3.05 | 2.6 | 2.5 | 2.5 |
| 21 | 2.5 | 3.1 | 3.05 | 3.1 | 3.35 | 3.45 | 4.35 | 4.15 | 3.05 | 2.6 | 2.5 | 2.5 |
| 22 | 2.5 | 3.05 | 3.0 | 3.05 | 3.3 | 3.45 | 4.45 | 4.3 | 3.0 | 2.6 | 2.5 | 2.5 |
| 23 | 2.6 | 3.0 | 3.0 | 3.05 | 3.3 | 3.4 | 4.25 | 4.45 | 3.0 | 2.55 | 2.5 | 2.5 |
| 24 | 2.5 | 3.0 | 3.0 | 3.0 | 3.3 | 3.4 | 4.35 | 4.5 | 3.0 | 2.55 | 2.5 | 2.5 |
| 25 | 2.6 | 2.95 | 3.0 | 3.0 | 3.2 | 3.4 | 4.5 | 4.45 | 3.0 | 2.55 | 2.5 | 2.5 |
| 26 | 2.7 | 2.95 | 2.9 | 3.0 | 3.15 | 3.3 | 4.8 | 4.35 | 3.0 | 2.55 | 2.5 | 2.5 |
| 27 | 2.6 | 2.95 | 2.85 | 3.05 | 3.1 | 3.3 | 4.6 | 4.2 | 3.0 | 2.55 | 2.5 | 2.5 |
| 28 | 2.6 | 2.95 | 2.8 | 3.1 | 3.05 | 3.25 | 4.3 | 4.0 | 2.9 | 2.55 | 2.5 | 2.5 |
| 29 | 2.6 | 2.9 | 2.8 | 3.2 | ..... | 3.4 | 4.15 | 3.9 | 2.9 | 2.55 | 2.5 | 2.5 |
| 30 | 2.6 | 2.9 | 2.9 | 3.2 | ..... | 3.7 | 4.0 | 3.8 | 2.9 | 2.55 | 2.5 | 2.5 |
| 31 | 2.6 | ..... | 3.0 | 3.25 | ..... | 3.95 | ..... | 3.8 | ..... | 2.55 | 2.5 | ..... |

*Daily discharge, in second-feet, of Sacramento River at Castella, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 200 | 225 | 315 | 375 | 495 | 375 | 1,100 | 900 | 860 | 315 | 212 | 200 |
| 2 | 200 | 225 | 295 | 375 | 520 | 375 | 1,060 | 860 | 860 | 295 | 212 | 200 |
| 3 | 200 | 225 | 295 | 355 | 495 | 420 | 980 | 860 | 820 | 295 | 212 | 200 |
| 4 | 200 | 225 | 295 | 335 | 445 | 445 | 1,810 | 1,020 | 780 | 278 | 212 | 200 |
| 5 | 200 | 398 | 295 | 335 | 420 | 470 | 3,080 | 1,100 | 710 | 278 | 212 | 200 |
| 6 | 200 | 1,190 | 295 | 315 | 445 | 580 | 1,810 | 1,280 | 675 | 260 | 212 | 200 |
| 7 | 200 | 580 | 295 | 295 | 470 | 640 | 1,430 | 1,430 | 675 | 260 | 212 | 200 |
| 8 | 200 | 375 | 295 | 295 | 520 | 710 | 1,240 | 1,480 | 675 | 242 | 212 | 200 |
| 9 | 200 | 3,360 | 278 | 295 | 520 | 820 | 1,240 | 2,680 | 640 | 242 | 212 | 200 |
| 10 | 200 | 1,240 | 278 | 295 | 520 | 940 | 1,240 | 2,050 | 610 | 242 | 212 | 200 |
| 11 | 200 | 710 | 278 | 295 | 550 | 1,020 | 940 | 1,700 | 580 | 225 | 212 | 200 |
| 12 | 200 | 580 | 278 | 315 | 550 | 900 | 1,590 | 1,480 | 550 | 225 | 212 | 200 |
| 13 | 200 | 495 | 278 | 335 | 580 | 780 | 1,930 | 1,330 | 520 | 225 | 212 | 200 |
| 14 | 200 | 1,190 | 375 | 375 | 580 | 675 | 1,590 | 1,190 | 470 | 225 | 212 | 200 |
| 15 | 200 | 820 | 640 | 375 | 640 | 640 | 1,280 | 1,240 | 420 | 225 | 212 | 200 |
| 16 | 200 | 580 | 580 | 375 | 640 | 610 | 1,100 | 1,240 | 420 | 225 | 212 | 200 |
| 17 | 200 | 520 | 520 | 398 | 820 | 640 | 1,100 | 1,280 | 420 | 225 | 200 | 200 |
| 18 | 200 | 470 | 495 | 980 | 820 | 640 | 1,190 | 1,430 | 420 | 225 | 200 | 200 |
| 19 | 200 | 445 | 470 | 640 | 675 | 640 | 1,240 | 1,330 | 398 | 225 | 200 | 200 |
| 20 | 200 | 470 | 398 | 495 | 610 | 640 | 1,190 | 1,190 | 398 | 225 | 200 | 200 |
| 21 | 200 | 420 | 398 | 420 | 550 | 610 | 1,330 | 1,140 | 398 | 225 | 200 | 200 |
| 22 | 200 | 398 | 375 | 398 | 520 | 610 | 1,430 | 1,280 | 375 | 225 | 200 | 200 |
| 23 | 225 | 375 | 375 | 398 | 520 | 580 | 1,240 | 1,430 | 375 | 212 | 200 | 200 |
| 24 | 200 | 375 | 375 | 375 | 520 | 580 | 1,330 | 1,480 | 375 | 212 | 200 | 200 |
| 25 | 225 | 355 | 375 | 375 | 470 | 580 | 1,480 | 1,430 | 375 | 212 | 200 | 200 |
| 26 | 260 | 355 | 335 | 375 | 445 | 520 | 1,810 | 1,330 | 375 | 212 | 200 | 200 |
| 27 | 225 | 355 | 315 | 398 | 420 | 520 | 1,590 | 1,190 | 375 | 212 | 200 | 200 |
| 28 | 225 | 355 | 295 | 420 | 398 | 495 | 1,280 | 1,020 | 335 | 212 | 200 | 200 |
| 29 | 225 | 335 | 295 | 470 | ..... | 580 | 1,140 | 940 | 335 | 212 | 200 | 200 |
| 30 | 225 | 335 | 335 | 470 | ..... | 780 | 1,020 | 860 | 335 | 212 | 200 | 200 |
| 31 | 225 | ..... | 375 | 495 | ..... | 980 | ..... | 860 | ..... | 212 | 200 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve.

*Monthly discharge of Sacramento River at Castella, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 257 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 260 | 200 | 208 | 0.809 | 0.93 | 12,800 | B. |
| November | 3,360 | 225 | 599 | 2.33 | 2.60 | 35,600 | B. |
| December | 640 | 278 | 358 | 1.39 | 1.60 | 22,000 | B. |
| January | 980 | 295 | 402 | 1.56 | 1.80 | 24,700 | B. |
| February | 820 | 398 | 541 | 2.11 | 2.20 | 30,000 | B. |
| March | 1,020 | 375 | 639 | 2.49 | 2.87 | 39,300 | B. |
| April | 3,080 | 940 | 1,390 | 5.41 | 6.04 | 82,700 | C. |
| May | 2,680 | 860 | 1,290 | 5.02 | 5.79 | 79,300 | C. |
| June | 860 | 335 | 518 | 2.02 | 2.25 | 30,800 | B. |
| | | | | | | 14,500 | B. |
| July | 315 | 212 | 236 | .918 | 1.06 | | |
| August | 212 | 200 | 206 | .802 | .92 | 12,700 | B. |
| September | 200 | 200 | 200 | .778 | .87 | 11,900 | B. |
| The year | 3,360 | 200 | 548 | .213 | 28.93 | 396,000 | |

## SACRAMENTO RIVER NEAR RED BLUFF, CAL.

LOCATION.—In lot 4, sec. 34, T. 28 N., R. 3 W., at the lower end of Iron Canyon, 4 miles northeast of Red Bluff, and about 3 miles below the Iron Canyon dam site. Paines Creek enters about 3 miles above and Antelope Creek about 7 miles below the station.

RECORDS AVAILABLE.—January 28, 1902, to September 30, 1913. The State engineer in 1879, and the commissioner of public works in 1893 and 1894 made measurements at this point. From April 30, 1895, to June 30, 1902, a gaging station was maintained at Jellys Ferry, 12 miles above Red Bluff.

DRAINAGE AREA.—10,400 square miles, including Goose Lake drainage area of 1,090 square miles.

GAGE.—Staff in seven sections on the left bank. Several gages have been used at this station, but all observations have been reduced to the present datum.

CHANNEL.—Coarse gravel and small bowlders; practically permanent.

DISCHARGE MEASUREMENTS.—Made from a cable 50 feet above the gage.

DIVERSIONS AND STORAGE.—No storage of importance has been developed in the drainage area above the station. With the exception of a small quantity of water diverted for irrigation from some of the minor tributaries, the record at this station gives the natural run-off from the basin.

ACCURACY.—Rating curve well defined except during extremely high water; results excellent.

*Discharge measurements of Sacramento River near Red Bluff, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 12 | Lasley Lee | 1.25 | 4,980 | June 6 | G. H. Canfield | 2.47 | 7,930 |
| Nov. 27 | do | 2.01 | 6,460 | Aug. 31 | Lasley Lee | 1.14 | 4,610 |

*Daily gage height, in feet, of Sacramento River near Red Bluff, Cal., for the year ending Sept. 30, 1913.*

[Richard Groebe, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.2 | 1.4 | 1.9 | 2.6 | 4.0 | 2.6 | 4.9 | 3.9 | 2.7 | 1.9 | 1.5 | 1.1 |
| 2 | 1.2 | 1.4 | 1.9 | 2.4 | 4.1 | 2.6 | 5.1 | 3.7 | 2.7 | 1.8 | 1.4 | 1.1 |
| 3 | 1.2 | 1.4 | 1.8 | 2.3 | 4.0 | 2.6 | 5.2 | 3.6 | 2.6 | 1.8 | 1.4 | 1.1 |
| 4 | 1.2 | 1.5 | 1.8 | 2.2 | 3.8 | 2.6 | 5.6 | 3.5 | 2.6 | 1.8 | 1.4 | 1.1 |
| 5 | 1.2 | 1.7 | 1.8 | 2.2 | 3.7 | 2.7 | 6.8 | 3.5 | 2.6 | 1.8 | 1.4 | 1.1 |
| 6 | 1.2 | 8.4 | 1.7 | 2.0 | 3.5 | 2.8 | 6.4 | 3.6 | 2.5 | 1.7 | 1.4 | 1.1 |
| 7 | 1.2 | 5.7 | 1.7 | 2.0 | 3.4 | 2.8 | 5.9 | 3.6 | 2.4 | 1.7 | 1.4 | 1.1 |
| 8 | 1.2 | 2.8 | 1.7 | 2.0 | 3.4 | 3.0 | 5.45 | 3.8 | 2.3 | 1.6 | 1.3 | 1.1 |
| 9 | 1.2 | 3.0 | 1.7 | 2.1 | 3.4 | 3.4 | 4.9 | 4.1 | 2.4 | 1.6 | 1.3 | 1.1 |
| 10 | 1.2 | 6.7 | 1.7 | 2.2 | 3.4 | 3.6 | 4.9 | 4.7 | 2.4 | 1.7 | 1.3 | 1.1 |
| 11 | 1.2 | 4.6 | 1.7 | 2.2 | 3.5 | 3.7 | 4.8 | 4.5 | 2.3 | 1.6 | 1.3 | 1.0 |
| 12 | 1.2 | 3.5 | 1.7 | 2.3 | 3.5 | 3.8 | 4.8 | 4.2 | 2.2 | 1.6 | 1.3 | 1.0 |
| 13 | 1.2 | 3.0 | 1.7 | 4.2 | 3.4 | 3.7 | 4.9 | 4.1 | 2.1 | 1.5 | 1.3 | 1.0 |
| 14 | 1.2 | 3.0 | 1.8 | 12.6 | 3.4 | 3.6 | 5.0 | 3.8 | 2.0 | 1.5 | 1.3 | 1.0 |
| 15 | 1.2 | 4.3 | 5.3 | 12.6 | 3.4 | 3.4 | 5.2 | 3.7 | 2.0 | 1.4 | 1.3 | 1.0 |
| 16 | 1.2 | 3.6 | 6.4 | 8.4 | 3.4 | 3.1 | 4.8 | 3.6 | 2.0 | 1.4 | 1.2 | 1.0 |
| 17 | 1.2 | 3.1 | 5.0 | 6.7 | 3.5 | 3.2 | 4.6 | 3.6 | 1.9 | 1.4 | 1.2 | 1.0 |
| 18 | 1.2 | 2.8 | 4.2 | 13.4 | 3.5 | 4.1 | 5.0 | 3.8 | 1.9 | 1.4 | 1.2 | 1.0 |
| 19 | 1.2 | 2.6 | 3.6 | 11.4 | 3.5 | 3.7 | 4.9 | 4.0 | 2.0 | 1.4 | 1.2 | 1.0 |
| 20 | 1.2 | 2.8 | 3.2 | 6.9 | 3.4 | 3.5 | 4.9 | 3.8 | 2.0 | 1.4 | 1.2 | 1.0 |
| 21 | 1.2 | 2.6 | 2.9 | 5.6 | 3.2 | 3.5 | 4.8 | 3.6 | 1.9 | 1.3 | 1.2 | 1.0 |
| 22 | 1.3 | 2.4 | 2.7 | 4.9 | 3.0 | 6.4 | 4.8 | 3.5 | 1.8 | 1.4 | 1.1 | 1.0 |
| 23 | 1.5 | 2.3 | 2.6 | 4.4 | 3.0 | 4.8 | 4.6 | 3.4 | 2.0 | 1.4 | 1.1 | 1.0 |
| 24 | 1.4 | 2.2 | 2.4 | 4.0 | 3.1 | 4.5 | 4.5 | 3.4 | 2.0 | 1.4 | 1.1 | 1.0 |
| 25 | 1.4 | 2.1 | 2.3 | 3.8 | 3.1 | 3.9 | 4.6 | 3.4 | 2.0 | 1.4 | 1.1 | 1.0 |
| 26 | 1.8 | 2.1 | 2.2 | 4.0 | 2.4 | 3.6 | 4.7 | 3.2 | 2.2 | 1.5 | 1.1 | 1.0 |
| 27 | 1.6 | 2.0 | 2.2 | 4.0 | 2.8 | 3.5 | 4.8 | 3.2 | 2.3 | 1.6 | 1.1 | 1.0 |
| 28 | 1.5 | 2.0 | 2.2 | 4.1 | 2.7 | 3.4 | 4.6 | 3.2 | 2.3 | 1.5 | 1.1 | 1.0 |
| 29 | 1.5 | 2.0 | 2.1 | 4.1 | ..... | 3.5 | 4.3 | 3.0 | 2.0 | 1.5 | 1.1 | 1.0 |
| 30 | 1.6 | 1.9 | 2.2 | 4.0 | ..... | 3.9 | 4.0 | 2.8 | 1.9 | 1.5 | 1.1 | 1.0 |
| 31 | 1.5 | ..... | 2.3 | 4.0 | ..... | 4.0 | ..... | 2.8 | ..... | 1.5 | 1.1 | ..... |

*Daily discharge, in second-feet, of Sacramento River near Red Bluff, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,790 | 5,210 | 6,370 | 8,300 | 12,900 | 8,300 | 16,200 | 12,600 | 8,600 | 6,370 | 5,430 | 4,590 |
| 2 | 4,790 | 5,210 | 6,370 | 7,710 | 13,300 | 8,300 | 17,000 | 11,900 | 8,600 | 6,120 | 5,210 | 4,490 |
| 3 | 4,790 | 5,210 | 6,120 | 7,430 | 12,900 | 8,300 | 17,400 | 11,500 | 8,300 | 6,120 | 5,210 | 4,590 |
| 4 | 4,790 | 5,430 | 6,120 | 7,160 | 12,200 | 8,300 | 19,000 | 11,200 | 8,300 | 6,120 | 5,210 | 4,590 |
| 5 | 4,790 | 5,880 | 6,120 | 7,160 | 11,900 | 8,600 | 24,000 | 11,200 | 8,300 | 6,120 | 5,210 | 4,590 |
| 6 | 4,790 | 31,300 | 5,880 | 6,630 | 11,200 | 8,910 | 22,300 | 11,500 | 8,000 | 5,880 | 5,210 | 4,590 |
| 7 | 4,790 | 19,400 | 5,880 | 6,630 | 10,900 | 8,910 | 20,200 | 11,500 | 7,710 | 5,880 | 5,210 | 4,590 |
| 8 | 4,790 | 8,910 | 5,880 | 6,630 | 10,900 | 9,540 | 18,200 | 12,200 | 7,430 | 5,650 | 5,000 | 4,590 |
| 9 | 4,790 | 9,540 | 5,880 | 6,890 | 10,900 | 10,900 | 16,200 | 13,300 | 7,710 | 5,650 | 5,000 | 4,590 |
| 10 | 4,790 | 23,600 | 5,880 | 7,160 | 10,900 | 11,500 | 16,200 | 15,500 | 7,710 | 5,880 | 5,000 | 4,590 |
| 11 | 4,790 | 15,100 | 5,880 | 7,160 | 11,200 | 11,900 | 15,900 | 14,800 | 7,430 | 5,650 | 5,000 | 4,390 |
| 12 | 4,790 | 11,200 | 5,880 | 7,430 | 11,200 | 12,200 | 15,900 | 13,700 | 7,160 | 5,650 | 5,000 | 4,390 |
| 13 | 4,790 | 9,540 | 5,880 | 13,700 | 10,900 | 11,900 | 16,200 | 13,300 | 6,890 | 5,430 | 5,000 | 4,390 |
| 14 | 4,790 | 9,540 | 6,120 | 53,200 | 10,900 | 11,500 | 16,600 | 12,200 | 6,630 | 5,430 | 5,000 | 4,390 |
| 15 | 4,790 | 14,000 | 17,800 | 53,200 | 10,900 | 10,900 | 17,400 | 11,900 | 6,630 | 5,210 | 5,000 | 4,390 |
| 16 | 4,790 | 11,500 | 22,300 | 31,300 | 10,900 | 9,860 | 15,900 | 11,500 | 6,630 | 5,210 | 4,790 | 4,390 |
| 17 | 4,790 | 9,860 | 16,600 | 23,600 | 11,200 | 10,200 | 15,100 | 11,500 | 6,370 | 5,210 | 4,790 | 4,390 |
| 18 | 4,790 | 8,910 | 13,700 | 58,000 | 11,200 | 13,300 | 16,600 | 12,200 | 6,370 | 5,210 | 4,790 | 4,390 |
| 19 | 4,790 | 8,300 | 11,500 | 46,400 | 11,200 | 11,900 | 16,200 | 12,900 | 6,630 | 5,210 | 4,790 | 4,390 |
| 20 | 4,790 | 8,910 | 10,200 | 24,500 | 10,900 | 11,200 | 16,200 | 12,200 | 6,630 | 5,210 | 4,790 | 4,390 |
| 21 | 4,790 | 8,300 | 9,220 | 19,000 | 10,200 | 11,200 | 15,900 | 11,500 | 6,370 | 5,000 | 4,790 | 4,390 |
| 22 | 5,000 | 7,710 | 8,600 | 16,200 | 9,540 | 22,300 | 15,900 | 11,200 | 6,120 | 5,210 | 4,590 | 4,390 |
| 23 | 5,430 | 7,430 | 8,300 | 14,400 | 9,540 | 15,900 | 15,100 | 10,900 | 6,630 | 5,210 | 4,590 | 4,390 |
| 24 | 5,210 | 7,160 | 7,710 | 12,900 | 9,860 | 14,800 | 14,800 | 10,900 | 6,630 | 5,210 | 4,590 | 4,390 |
| 25 | 5,210 | 6,890 | 7,430 | 12,200 | 9,860 | 12,600 | 15,100 | 10,900 | 6,630 | 5,210 | 4,590 | 4,390 |
| 26 | 6,120 | 6,890 | 7,160 | 12,900 | 7,710 | 11,500 | 15,500 | 10,200 | 7,160 | 5,430 | 4,590 | 4,390 |
| 27 | 5,650 | 6,630 | 7,160 | 12,900 | 8,910 | 11,200 | 15,900 | 10,200 | 7,430 | 5,650 | 4,590 | 4,390 |
| 28 | 5,430 | 6,630 | 7,160 | 13,300 | 8,600 | 10,900 | 15,100 | 10,200 | 7,430 | 5,430 | 4,590 | 4,390 |
| 29 | 5,430 | 6,630 | 6,890 | 13,300 | ..... | 11,200 | 14,000 | 9,540 | 6,630 | 5,430 | 4,590 | 4,390 |
| 30 | 5,650 | 6,370 | 7,160 | 12,900 | ..... | 12,600 | 12,900 | 8,910 | 6,370 | 5,430 | 4,590 | 4,390 |
| 31 | 5,430 | ..... | 7,430 | 12,900 | ..... | 12,900 | ..... | 8,910 | ..... | 5,430 | 4,590 | ..... |

NOTE.—Dischargedeter mined from a well defined rating curve.

*Monthly discharge of Sacramento River near Red Bluff, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 10,400 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 6,120 | 4,790 | 5,000 | 0.481 | 0.55 | 307,000 | A. |
| November | 31,300 | 5,210 | 9,910 | .953 | 1.06 | 590,000 | A. |
| December | 22,300 | 5,880 | 8,410 | .809 | .93 | 517,000 | A. |
| January | 58,000 | 6,630 | 17,500 | 1.68 | 1.94 | 1,080,000 | A. |
| February | 13,300 | 7,710 | 10,800 | 1.04 | 1.08 | 600,000 | A. |
| March | 22,300 | 8,300 | 11,400 | 1.10 | 1.27 | 701,000 | A. |
| April | 24,000 | 12,900 | 16,600 | 1.60 | 1.78 | 988,000 | A. |
| May | 15,500 | 8,910 | 11,700 | 1.12 | 1.29 | 719,000 | A. |
| June | 8,600 | 6,120 | 7,180 | .690 | .77 | 427,000 | A. |
| July | 6,370 | 5,000 | 5,540 | .533 | .61 | 341,000 | A. |
| August | 5,430 | 4,590 | 4,880 | .469 | .54 | 300,000 | A. |
| September | 4,590 | 4,390 | 4,460 | .429 | .48 | 265,000 | A. |
| The year | 58,000 | 4,390 | 9,440 | .908 | 12.30 | 6,840,000 | |

## PIT RIVER AND TRIBUTARIES.

### PIT RIVER AT HENDERSON, CAL.

LOCATION.—In sec. 36, T. 37 N., R. 1 W., at Big Bend Ferry, one-fourth mile above Henderson. Nelson Creek enters half a mile above and Kosk Creek 1 mile below station.

RECORDS AVAILABLE.—September 28, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on alder tree on left bank about 100 feet above ferry. December 28, 1912, a Gurley electric water-stage recorder was installed 50 feet below staff gage. Original datum maintained. Gages do not read the same owing to slope of water surface between the two points.

CHANNEL.—Bowlders and coarse gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 80 feet below gage. A standard car and cable were installed in July, 1913, 25 feet below recording gage.

ACCURACY.—Rating curve fairly well defined; results good since December, 1912, when water stage recorder was installed. Gage heights reported previous to that date, uncertain.

*Discharge measurements of Pit River at Henderson, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 31 | Lasley Lee | [a]0.80 | 2,790 | Apr. 18 | G. H. Canfield | 1.61 | 4,270 |
| 31 | do | [a].80 | 2,790 | May 16 | do | 1.21 | 3,490 |
| Dec. 29 | do | .84 | 2,770 | 19 | do | 1.45 | 3,970 |
| Jan. 25 | G. H. Canfield | .86 | 2,870 | 19 | do | 1.45 | 3,970 |
| Mar. 4 | do | .99 | 3,080 | July 3 | do | .84 | 2,960 |
| Apr. 17 | do | 1.60 | 4,170 | Sept. 17 | Lasley Lee | .64 | 2,540 |

[a] Gage height determined from staff-gage reading of 0.86 foot, by means of relation curve.

*Daily gage height in feet, of Pit River at Henderson, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.8 | 0.9 | 1.0 | 0.9 | 0.9 | 0.95 | 2.5 | 1.45 | 0.9 | 0.85 | 0.95 | 0.65 |
| 2 | .8 | .9 | 1.0 | .9 | .9 | .95 | 3.0 | 1.45 | .9 | .8 | .95 | .65 |
| 3 | .8 | .9 | 1.0 | .85 | .9 | .95 | 3.1 | 1.35 | .9 | .8 | .95 | .65 |
| 4 | .8 | .9 | 1.0 | .85 | 1.0 | 1.0 | 2.9 | 1.3 | .9 | .85 | .95 | .65 |
| 5 | .8 | 1.0 | 1.0 | .8 | 1.0 | 1.1 | 2.6 | 1.3 | .85 | .85 | .95 | .7 |
| 6 | .8 | 1.1 | 1.0 | .8 | .95 | 1.15 | 2.6 | 1.25 | .85 | .85 | .95 | .7 |
| 7 | .8 | 1.1 | 1.0 | .8 | .95 | 1.25 | 2.4 | 1.25 | .85 | .8 | .9 | .65 |
| 8 | .8 | 1.1 | .9 | .8 | .95 | 1.45 | 2.1 | 1.2 | .85 | .9 | .9 | .65 |
| 9 | .8 | 1.1 | .9 | .85 | .95 | 1.7 | 1.95 | 1.25 | .85 | .95 | .9 | .65 |
| 10 | .8 | 1.1 | .9 | .8 | 1.05 | 1.75 | 1.9 | 1.25 | .85 | .9 | .85 | .65 |
| 11 | .8 | 1.0 | .9 | .8 | 1.0 | 1.85 | 1.8 | 1.3 | .85 | .9 | .8 | .65 |
| 12 | .8 | 1.0 | .9 | .85 | 1.0 | 1.9 | 1.75 | 1.3 | .85 | .85 | .8 | .65 |
| 13 | .8 | 1.0 | .9 | .85 | 1.0 | 1.9 | 1.75 | 1.25 | .8 | .8 | .8 | .65 |
| 14 | .9 | 1.0 | 1.1 | .9 | 1.0 | 1.8 | 1.7 | 1.25 | .8 | .8 | .8 | .65 |
| 15 | .9 | 1.0 | 1.2 | .95 | 1.0 | 1.6 | 1.65 | 1.3 | .8 | .8 | .75 | .65 |
| 16 | .9 | 1.0 | 1.1 | .9 | 1.05 | 1.4 | 1.6 | 1.25 | .8 | .75 | .75 | .65 |
| 17 | .9 | 1.0 | ..... | .9 | 1.1 | 1.3 | 1.6 | 1.2 | .8 | .75 | .75 | .65 |
| 18 | .9 | 1.0 | 1.1 | 1.05 | 1.05 | 1.35 | 1.6 | 1.35 | .8 | .75 | .7 | .65 |
| 19 | .9 | 1.0 | 1.0 | 1.1 | 1.05 | 1.35 | 1.65 | 1.45 | .8 | .75 | .7 | .65 |
| 20 | .9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.4 | 1.6 | 1.35 | .8 | .75 | .7 | .65 |
| 21 | .9 | 1.0 | 1.0 | 1.05 | 1.0 | 1.45 | 1.6 | 1.25 | .8 | .75 | .7 | .65 |
| 22 | .9 | 1.0 | 1.0 | 1.05 | 1.0 | 1.5 | 1.6 | 1.2 | .85 | .75 | .7 | .65 |
| 23 | .9 | 1.0 | ..... | .95 | 1.0 | 1.5 | 1.65 | 1.15 | .85 | .75 | .65 | .6 |
| 24 | .9 | 1.0 | 1.0 | .9 | 1.0 | 1.45 | 1.65 | 1.1 | .9 | .75 | .65 | .6 |
| 25 | .9 | 1.0 | 1.0 | .85 | .95 | 1.45 | 1.65 | 1.0 | .9 | .75 | .65 | .6 |
| 26 | .9 | 1.0 | 1.0 | .85 | .95 | 1.35 | 1.65 | .95 | .95 | .9 | .7 | .65 |
| 27 | .9 | 1.0 | ..... | .85 | .95 | 1.3 | 1.6 | .95 | .95 | .85 | .7 | .65 |
| 28 | .9 | 1.0 | .85 | .85 | .95 | 1.3 | 1.55 | 1.0 | .9 | .85 | .7 | .65 |
| 29 | .9 | 1.0 | .85 | .85 | ..... | 1.4 | 1.5 | .95 | .9 | .9 | .7 | .65 |
| 30 | .9 | 1.0 | .85 | .85 | ..... | 1.6 | 1.45 | .95 | .9 | 1.0 | .7 | .65 |
| 31 | .9 | ..... | .9 | .85 | ..... | 2.15 | ..... | .9 | ..... | 1.0 | .65 | ..... |

*Daily discharge, in second-feet, of Pit River at Henderson, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | |
| 1 | ..... | 3,550 | 3,190 | 5,790 | 3,550 | 10,200 | 5,430 | 4,290 | 3,370 | 3,020 | 2,850 |
| 2 | ..... | 3,740 | 3,190 | 6,010 | 3,550 | 10,200 | 5,500 | 4,250 | 3,370 | 3,020 | 2,850 |
| 3 | ..... | 3,930 | 3,190 | 6,710 | 3,550 | 10,100 | 5,570 | 4,210 | 3,370 | 3,020 | 2,850 |
| 4 | ..... | 4,130 | 3,190 | 6,950 | 3,550 | 10,100 | 5,570 | 4,170 | 3,370 | 3,020 | 2,850 |
| 5 | ..... | 4,130 | 3,020 | 7,190 | 3,740 | 10,200 | 5,570 | 4,130 | 3,370 | 3,020 | 2,850 |
| 6 | ..... | 4,130 | 3,020 | 7,190 | 4,130 | 10,200 | 5,570 | 4,130 | 3,370 | 3,020 | 2,850 |
| 7 | ..... | 3,930 | 3,020 | 7,190 | 4,330 | 9,950 | 5,570 | 4,130 | 3,370 | 3,020 | 2,850 |
| 8 | ..... | 4,130 | 3,020 | 6,710 | 4,940 | 9,520 | 5,460 | 4,130 | 3,370 | 3,020 | 2,910 |
| 9 | ..... | 4,330 | 3,020 | 6,470 | 6,240 | 9,100 | 5,360 | 4,080 | 3,370 | 3,020 | 2,960 |
| 10 | ..... | 4,730 | 3,020 | 6,240 | 7,430 | 8,670 | 5,790 | 4,030 | 3,310 | 3,020 | 3,020 |
| 11 | ..... | 4,730 | 3,020 | 6,240 | 6,950 | 8,180 | 5,750 | 3,980 | 3,250 | 3,020 | 3,020 |
| 12 | ..... | 4,530 | 3,020 | 6,240 | 7,190 | 7,690 | 5,700 | 3,930 | 3,190 | 3,020 | 3,020 |
| 13 | ..... | 4,530 | 3,020 | 6,010 | 8,670 | 7,200 | 5,660 | 3,930 | 3,190 | 3,020 | 3,020 |
| 14 | ..... | 4,530 | 3,190 | 5,790 | 9,430 | 6,710 | 5,610 | 3,930 | 3,190 | 3,020 | 3,020 |
| 15 | 3,020 | 4,130 | 3,190 | 5,570 | 9,430 | 6,240 | 5,570 | 3,840 | 3,190 | 3,020 | 3,020 |
| 16 | 3,020 | 3,550 | 3,190 | 5,360 | 9,170 | 6,150 | 5,410 | 3,740 | 3,190 | 3,020 | 3,020 |
| 17 | 3,190 | 3,550 | 3,190 | 4,940 | 9,170 | 6,060 | 5,260 | 3,640 | 3,190 | 3,020 | 3,020 |
| 18 | 3,020 | 3,740 | 3,370 | 4,530 | 9,170 | 5,970 | 5,100 | 3,550 | 3,190 | 3,020 | 3,020 |
| 19 | 3,020 | 3,740 | 3,370 | 4,330 | 9,170 | 5,880 | 4,940 | 3,510 | 3,190 | 3,020 | 3,020 |
| 20 | 3,020 | 3,550 | 3,740 | 3,930 | 9,170 | 5,790 | 4,840 | 3,480 | 3,190 | 3,020 | 3,020 |
| 21 | 3,020 | 3,550 | 3,930 | 3,740 | 9,690 | 5,790 | 4,730 | 3,440 | 3,190 | 3,020 | 3,020 |
| 22 | 3,190 | 3,740 | 3,740 | 3,740 | 10,200 | 5,790 | 4,690 | 3,410 | 3,190 | 3,000 | 3,020 |
| 23 | 3,190 | 3,740 | 3,370 | 3,550 | 11,300 | 5,790 | 4,650 | 3,370 | 3,190 | 2,980 | 3,020 |
| 24 | 3,020 | 3,370 | 3,370 | 3,550 | 12,400 | 5,790 | 4,610 | 3,370 | 3,190 | 2,960 | 3,020 |
| 25 | 3,020 | 3,370 | 3,370 | 3,550 | 13,200 | 5,790 | 4,570 | 3,370 | 3,150 | 2,940 | 3,020 |
| 26 | 3,190 | 3,280 | 3,550 | 3,550 | 12,600 | 5,790 | 4,530 | 3,370 | 3,100 | 2,930 | 3,020 |
| 27 | 3,370 | 3,190 | 3,740 | 3,550 | 12,400 | 5,790 | 4,490 | 3,370 | 3,060 | 2,910 | 3,020 |
| 28 | 3,370 | 3,190 | 3,930 | 3,550 | 11,300 | 5,790 | 4,450 | 3,370 | 3,020 | 2,890 | 3,020 |
| 29 | 3,370 | 3,190 | 5,360 | ..... | 10,500 | 5,580 | 4,410 | 3,370 | 3,020 | 2,870 | 3,020 |
| 30 | 3,550 | 3,190 | 6,010 | ..... | 10,200 | 5,360 | 4,370 | 3,370 | 3,020 | 2,850 | 3,020 |
| 31 | ..... | 3,190 | 5,790 | ..... | 9,690 | ..... | 4,330 | ..... | 3,020 | 2,850 | ..... |

*Daily discharge, in second-feet, of Pit River at Henderson, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 3,020 | 3,100 | 3,190 | 3,020 | 3,550 | 3,020 | 3,020 | 4,130 | 3,370 | 3,020 | 2,850 | 2,690 |
| 2 | 3,020 | 3,150 | 3,190 | 3,020 | 3,550 | 3,190 | 3,020 | 4,530 | 3,370 | 3,020 | 2,850 | 2,690 |
| 3 | 3,020 | 3,190 | 3,190 | 3,190 | 3,370 | 3,370 | 3,020 | 4,530 | 3,370 | 3,020 | 2,850 | 2,690 |
| 4 | 3,020 | 3,190 | 3,190 | 3,190 | 3,370 | 3,370 | 3,020 | 4,530 | 3,190 | 2,850 | 2,690 | 2,690 |
| 5 | 3,020 | 3,190 | 3,190 | 3,190 | 3,370 | 3,370 | 3,020 | 4,530 | 3,190 | 2,850 | 2,690 | 2,690 |
| 6 | 3,020 | 3,190 | 3,190 | 3,190 | 3,370 | 3,370 | 3,190 | 4,130 | 3,020 | 2,850 | 2,690 | 2,690 |
| 7 | 3,020 | 3,190 | 3,190 | 3,370 | 3,190 | 3,370 | 3,190 | 3,930 | 3,020 | 2,850 | 2,690 | 2,690 |
| 8 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,370 | 3,190 | 3,740 | 2,850 | 2,850 | 2,690 | 2,690 |
| 9 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,370 | 3,190 | 3,740 | 2,850 | 2,850 | 2,690 | 2,850 |
| 10 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,370 | 3,370 | 3,740 | 2,850 | 2,850 | 2,690 | 2,850 |
| 11 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,550 | 3,370 | 3,740 | 2,850 | 2,850 | 2,690 | 2,690 |
| 12 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,550 | 3,550 | 3,740 | 2,850 | 2,850 | 2,690 | 2,690 |
| 13 | 3,020 | 3,190 | 3,190 | 3,370 | 3,370 | 3,550 | 3,740 | 3,550 | 2,850 | 2,850 | 2,690 | 2,690 |
| 14 | 3,020 | 3,190 | 3,150 | 3,190 | 3,370 | 3,740 | 3,740 | 3,550 | 2,850 | 2,850 | 2,690 | 2,690 |
| 15 | 3,020 | 3,190 | 3,100 | 3,190 | 3,370 | 3,740 | 3,740 | 3,370 | 2,850 | 2,690 | 2,690 | 2,690 |
| 16 | 3,020 | 3,190 | 3,060 | 3,370 | 3,550 | 3,740 | 3,550 | 3,190 | 2,850 | 2,690 | 2,690 | 2,690 |
| 17 | 3,020 | 3,190 | 3,020 | 3,370 | 3,740 | 3,930 | 3,370 | 3,020 | 2,850 | 2,690 | 2,690 | 2,690 |
| 18 | 3,020 | 3,190 | 3,020 | 3,370 | 3,740 | 3,930 | 3,370 | 3,020 | 2,850 | 2,850 | 2,690 | 2,690 |
| 19 | 3,020 | 3,190 | 3,020 | 3,370 | 3,550 | 3,740 | 3,190 | 3,020 | 2,850 | 3,020 | 2,600 | 2,690 |
| 20 | 3,020 | 3,190 | 3,020 | 3,370 | 3,550 | 3,740 | 3,190 | 3,190 | 3,020 | 3,020 | 2,690 | 2,690 |
| 21 | 3,020 | 3,190 | 3,020 | 3,370 | 3,550 | 3,740 | 3,370 | 3,370 | 3,020 | 3,020 | 2,690 | 2,690 |
| 22 | 3,020 | 3,190 | 3,020 | 3,190 | 3,370 | 3,740 | 3,370 | 3,370 | 3,020 | 3,020 | 2,690 | 2,690 |
| 23 | 3,020 | 3,190 | 3,020 | 3,370 | 3,370 | 3,740 | 3,370 | 3,370 | 3,370 | 3,020 | 2,690 | 2,690 |
| 24 | 3,020 | 3,190 | 3,020 | 3,370 | 3,370 | 3,550 | 3,370 | 3,550 | 3,190 | 3,020 | 2,690 | 2,690 |
| 25 | 3,020 | 3,190 | 3,020 | 4,530 | 3,370 | 3,550 | 3,370 | 3,740 | 3,190 | 3,020 | 2,690 | 2,690 |
| 26 | 3,020 | 3,190 | 3,020 | 4,940 | 3,370 | 3,370 | 3,370 | 3,740 | 3,020 | 3,020 | 2,690 | 2,690 |
| 27 | 3,020 | 3,190 | 3,020 | 4,940 | 3,190 | 3,370 | 3,370 | 3,740 | 3,020 | 2,850 | 2,690 | 2,690 |
| 28 | 3,020 | 3,190 | 3,020 | 4,330 | 3,020 | 3,570 | 3,550 | 3,740 | 3,020 | 3,020 | 2,690 | 2,690 |
| 29 | 3,020 | 3,190 | 3,020 | 4,130 | 3,020 | 3,190 | 3,740 | 3,740 | 2,850 | 3,020 | 2,690 | 2,690 |
| 30 | 3,020 | 3,190 | 3,020 | 3,930 | ..... | 3,190 | 3,740 | 3,740 | 2,850 | 3,020 | 2,690 | 2,690 |
| 31 | 3,060 | ..... | 3,020 | 3,740 | ..... | 3,020 | ..... | 3,370 | ..... | 2,850 | 2,690 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 2,690 | 2,850 | 3,020 | 2,940 | 2,940 | 3,020 | 6,170 | 3,950 | 2,940 | 2,860 | 3,020 | 2,560 |
| 2 | 2,690 | 2,850 | 3,020 | 2,940 | 2,940 | 3,020 | 7,360 | 3,950 | 2,940 | 2,780 | 3,020 | 2,560 |
| 3 | 2,690 | 2,850 | 3,020 | 2,860 | 2,940 | 3,020 | 7,600 | 3,760 | 2,940 | 2,780 | 3,020 | 2,560 |
| 4 | 2,690 | 2,850 | 3,020 | 2,860 | 3,110 | 3,110 | 7,120 | 3,660 | 2,940 | 2,860 | 3,020 | 2,560 |
| 5 | 2,690 | 3,020 | 3,020 | 2,780 | 3,110 | 3,290 | 6,400 | 3,660 | 2,860 | 2,860 | 3,020 | 2,630 |
| 6 | 2,690 | 3,190 | 3,020 | 2,780 | 3,020 | 3,380 | 6,400 | 3,560 | 2,860 | 2,860 | 3,020 | 2,630 |
| 7 | 2,690 | 3,190 | 3,020 | 2,780 | 3,020 | 3,560 | 5,940 | 3,560 | 2,860 | 2,780 | 2,940 | 2,560 |
| 8 | 2,690 | 3,190 | 2,850 | 2,780 | 3,020 | 3,950 | 5,290 | 3,470 | 2,860 | 2,940 | 2,940 | 2,560 |
| 9 | 2,690 | 3,190 | 2,850 | 2,860 | 3,020 | 4,450 | 4,980 | 3,560 | 2,860 | 3,020 | 2,940 | 2,560 |
| 10 | 2,690 | 3,190 | 2,850 | 2,780 | 3,200 | 4,560 | 4,870 | 3,560 | 2,860 | 2,940 | 2,860 | 2,560 |
| 11 | 2,690 | 3,020 | 2,850 | 2,780 | 3,110 | 4,760 | 4,660 | 3,660 | 2,860 | 2,940 | 2,780 | 2,560 |
| 12 | 2,690 | 3,020 | 2,850 | 2,860 | 3,110 | 4,870 | 4,560 | 3,660 | 2,860 | 2,860 | 2,780 | 2,560 |
| 13 | 2,690 | 3,020 | 2,850 | 2,860 | 3,110 | 4,870 | 4,560 | 3,560 | 2,780 | 2,780 | 2,780 | 2,560 |
| 14 | 2,850 | 3,020 | 3,190 | 2,940 | 3,110 | 4,660 | 4,450 | 3,560 | 2,780 | 2,780 | 2,780 | 2,560 |
| 15 | 2,850 | 3,020 | 3,370 | 3,020 | 2,110 | 4,250 | 4,350 | 3,660 | 2,780 | 2,780 | 2,700 | 2,560 |
| 16 | 2,850 | 3,020 | 3,190 | 2,940 | 3,200 | 3,850 | 4,250 | 3,560 | 2,780 | 2,700 | 2,700 | 2,560 |
| 17 | 2,850 | 3,020 | 3,190 | 2,940 | 3,290 | 3,660 | 4,250 | 3,470 | 2,780 | 2,700 | 2,700 | 2,560 |
| 18 | 2,850 | 3,020 | 3,190 | 3,200 | 3,200 | 3,760 | 4,250 | 3,760 | 2,780 | 2,700 | 2,630 | 2,560 |
| 19 | 2,850 | 3,020 | 3,020 | 3,290 | 3,200 | 3,760 | 4,350 | 3,950 | 2,780 | 2,700 | 2,630 | 2,560 |
| 20 | 2,850 | 3,020 | 3,020 | 3,110 | 3,110 | 3,850 | 4,250 | 3,760 | 2,780 | 2,700 | 2,630 | 2,560 |
| 21 | 2,850 | 3,020 | 3,020 | 3,200 | 3,110 | 3,950 | 4,250 | 3,560 | 2,780 | 2,700 | 2,630 | 2,560 |
| 22 | 2,850 | 3,020 | 3,020 | 3,200 | 3,110 | 4,050 | 4,250 | 3,470 | 2,860 | 2,700 | 2,630 | 2,560 |
| 23 | 2,850 | 3,020 | 3,020 | 3,020 | 3,110 | 4,050 | 4,350 | 3,380 | 2,860 | 2,700 | 2,560 | 2,490 |
| 24 | 2,850 | 3,020 | 3,020 | 2,940 | 3,110 | 3,950 | 4,350 | 3,290 | 2,940 | 2,700 | 2,560 | 2,490 |
| 25 | 2,850 | 3,020 | 3,020 | 2,860 | 3,020 | 3,950 | 4,350 | 3,110 | 2,940 | 2,700 | 2,560 | 2,490 |
| 26 | 2,850 | 3,020 | 3,020 | 2,860 | 3,020 | 3,760 | 4,350 | 3,020 | 3,020 | 2,940 | 2,630 | 2,560 |
| 27 | 2,850 | 3,020 | 2,940 | 2,860 | 3,020 | 3,660 | 4,250 | 3,020 | 3,020 | 2,860 | 2,630 | 2,560 |
| 28 | 2,850 | 3,020 | 2,860 | 2,860 | 3,020 | 3,660 | 4,150 | 3,110 | 2,940 | 2,860 | 2,630 | 2,560 |
| 29 | 2,850 | 3,020 | 2,860 | 2,860 | ..... | 3,850 | 4,050 | 3,020 | 2,940 | 2,940 | 2,630 | 2,560 |
| 30 | 2,850 | 3,020 | 2,860 | 2,860 | ..... | 4,250 | 3,950 | 3,020 | 2,940 | 3,110 | 2,630 | 2,560 |
| 31 | 2,850 | ..... | 2,940 | 2,860 | ..... | 5,400 | ..... | 2,940 | ..... | 3,110 | 2,560 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows:
Staff gage (used Nov. 15, 1910, to Dec. 26, 1912): Well defined below 7,000 second-feet. Water-stage recorder (used Dec. 28, 1912, to Sept. 30, 1913): Well defined below and fairly well defined above 5,000 second-feet.

Discharge interpolated for periods for which gage heights are not recorded, except Apr. 2-6, 1911, when it was estimated by comparison with graph of Pit River near Ydalpom. Estimates only approximate and should be used with caution.

*Monthly discharge of Pit River at Henderson, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1910–11. | | | | | |
| November 15–30 | 3,550 | 3,020 | 3,160 | 100,000 | B. |
| December | 4,730 | 3,190 | 3,820 | 235,000 | B. |
| January | 6,010 | 3,020 | 3,530 | 217,000 | B. |
| February | 7,190 | 3,550 | 5,290 | 294,000 | B. |
| March | 13,200 | 3,550 | 8,260 | 508,000 | C. |
| April | 10,200 | 5,360 | 7,380 | 439,000 | C. |
| May | 5,790 | 4,330 | 5,130 | 315,000 | C. |
| June | 4,290 | 3,370 | 3,760 | 224,000 | C. |
| July | 3,370 | 3,020 | 3,220 | 198,000 | C. |
| August | 3,020 | 2,850 | 2,990 | 184,000 | B. |
| September | 3,020 | 2,850 | 2,970 | 177,000 | B. |
| The period | | | | 2,890,000 | |
| 1911–12. | | | | | |
| October | 3,060 | 3,020 | 3,020 | 186,000 | B. |
| November | 3,190 | 3,100 | 3,190 | 190,000 | C. |
| December | 3,190 | 3,020 | 3,100 | 191,000 | B. |
| January | 4,940 | 3,020 | 3,530 | 217,000 | B. |
| February | 3,740 | 3,020 | 3,400 | 196,000 | B. |
| March | 3,930 | 3,020 | 3,490 | 215,000 | B. |
| April | 3,740 | 3,020 | 3,360 | 200,000 | B. |
| May | 4,530 | 3,030 | 3,690 | 227,000 | B. |
| June | 3,370 | 2,850 | 3,010 | 179,000 | B. |
| July | 3,020 | 2,690 | 2,910 | 179,000 | B. |
| August | 2,850 | 2,690 | 2,710 | 167,000 | B. |
| September | 2,850 | 2,690 | 2,700 | 161,000 | B. |
| The year | 4,940 | 2,690 | 3,170 | 2,310,000 | |
| 1912–13. | | | | | |
| October | 2,850 | 2,690 | 2,780 | 171,000 | B. |
| November | 3,190 | 2,850 | 3,030 | 181,000 | B. |
| December | 3,190 | 2,850 | 3,000 | 184,000 | B. |
| January | 3,290 | 2,780 | 2,930 | 180,000 | A. |
| February | 3,290 | 2,940 | 3,090 | 172,000 | A. |
| March | 5,400 | 3,020 | 3,940 | 242,000 | A. |
| April | 7,600 | 3,950 | 4,950 | 295,000 | A. |
| May | 3,950 | 2,940 | 3,490 | 215,000 | A. |
| June | 3,020 | 2,780 | 2,870 | 171,000 | A. |
| July | 3,110 | 2,700 | 2,830 | 174,000 | A. |
| August | 3,020 | 2,560 | 2,760 | 170,000 | A. |
| September | 2,630 | 2,490 | 2,560 | 152,000 | A. |
| The year | 7,600 | 2,490 | 3,180 | 2,310,000 | |

### PIT RIVER NEAR YDALPOM, CAL.

LOCATION.—In the NW. ¼ sec. 32, T. 34 N., R. 3 W., at Silverthorne Ferry, 1½ miles southwest of Ydalpom and 7½ miles above junction with Sacramento River. Squaw Creek enters half a mile above and McCloud River 4 miles below the station.

RECORDS AVAILABLE.—November 16, 1910, to September 30, 1913.

DRAINAGE AREA.—6,350 square miles.

GAGE.—Vertical staff in two sections on an ash tree on left bank 350 feet below ferry.

CHANNEL.—Gravel and sand; appears permanent.

DISCHARGE MEASUREMENTS.—Made from car and cable 50 feet above ferry cable.

DIVERSION.—Water is diverted for irrigation from the main stream and tributaries above the station.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Pit River near Ydalpom, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 11 | Lasley Lee | 3.82 | 4,180 | Apr. 10 | G. H. Canfield | 5.30 | 6,960 |
| Feb. 26 | G. H. Canfield | 3.70 | 4,260 | Sept. 1 | Lasley Lee | 2.76 | 2,680 |

*Daily gage height, in feet, of Pit River near Ydalpom, Cal., for the year ending Sept. 30, 1913.*

[M. D. Rodrigue, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.8 | 3.0 | 3.2 | 3.6 | 4.0 | 3.6 | 5.9 | 4.2 | 3.6 | 3.3 | 3.2 | 2.8 |
| 2 | 2.8 | 3.0 | 3.2 | 3.5 | 4.0 | 3.6 | 6.4 | 4.2 | 3.4 | 3.2 | 3.2 | 2.8 |
| 3 | 2.8 | 3.0 | 3.1 | 3.4 | 4.1 | 3.6 | 6.5 | 4.2 | 3.4 | 3.2 | 3.2 | 2.8 |
| 4 | 2.8 | 3.0 | 3.1 | 3.4 | 4.1 | 3.8 | 6.6 | 4.2 | 3.4 | 3.2 | 3.2 | 2.8 |
| 5 | 2.8 | 3.1 | 3.1 | 3.4 | 4.0 | 3.8 | 6.8 | 4.1 | 3.4 | 3.2 | 3.2 | 2.8 |
| 6 | 2.8 | 5.6 | 3.0 | 3.3 | 4.0 | 4.0 | 6.4 | 4.1 | 3.4 | 3.2 | 3.2 | 2.8 |
| 7 | 2.8 | 3.9 | 3.0 | 3.2 | 4.0 | 4.2 | 6.0 | 4.5 | 3.3 | 3.2 | 3.1 | 2.8 |
| 8 | 2.8 | 3.6 | 3.0 | 3.3 | 4.0 | 4.4 | 5.7 | 4.4 | 3.3 | 3.2 | 3.1 | 2.8 |
| 9 | 2.8 | 4.0 | 3.0 | 3.4 | 4.0 | 4.4 | 5.4 | 4.2 | 3.3 | 3.2 | 3.1 | 2.8 |
| 10 | 2.8 | 3.9 | 3.0 | 3.6 | 4.0 | 4.7 | 5.2 | 4.1 | 3.2 | 3.1 | 3.0 | 2.8 |
| 11 | 2.8 | 3.8 | 3.0 | 3.8 | 4.0 | 4.9 | 5.2 | 4.1 | 3.2 | 3.1 | 3.0 | 2.8 |
| 12 | 2.8 | 3.4 | 3.0 | 3.8 | 4.0 | 4.8 | 5.2 | 4.3 | 3.2 | 3.1 | 3.0 | 2.8 |
| 13 | 2.8 | 3.5 | 3.0 | 3.9 | 4.0 | 4.6 | 5.2 | 4.2 | 3.2 | 3.1 | 3.0 | 2.8 |
| 14 | 2.8 | 3.5 | 3.3 | 5.1 | 4.0 | 4.8 | 5.1 | 4.0 | 3.2 | 3.0 | 2.9 | 2.8 |
| 15 | 2.8 | 3.6 | 3.3 | 5.3 | 4.0 | 4.8 | 5.1 | 4.0 | 3.2 | 3.0 | 2.9 | 2.8 |
| 16 | 2.8 | 3.6 | 4.9 | 5.2 | 4.0 | 4.7 | 4.9 | 4.0 | 3.2 | 3.0 | 2.9 | 2.8 |
| 17 | 2.8 | 3.5 | 5.0 | 4.9 | 4.0 | 4.6 | 4.9 | 4.0 | 3.2 | 3.0 | 2.9 | 2.8 |
| 18 | 2.8 | 3.4 | 4.8 | 10.0 | 4.0 | 4.6 | 5.0 | 4.5 | 3.2 | 3.0 | 2.9 | 2.8 |
| 19 | 2.8 | 3.4 | 4.4 | 7.6 | 4.0 | 4.7 | 5.0 | 4.4 | 3.2 | 3.0 | 2.9 | 2.8 |
| 20 | 2.8 | 3.4 | 4.0 | 5.2 | 4.0 | 4.8 | 5.0 | 4.2 | 3.2 | 3.0 | 2.8 | 2.8 |
| 21 | 2.8 | 3.3 | 3.8 | 4.9 | 4.0 | 4.9 | 5.0 | 4.2 | 3.2 | 3.0 | 2.8 | 2.8 |
| 22 | 2.8 | 3.3 | 3.6 | 4.6 | 4.0 | 5.6 | 4.9 | 4.0 | 3.2 | 3.0 | 2.8 | 2.8 |
| 23 | 2.8 | 3.3 | 3.6 | 4.5 | 4.0 | 4.6 | 4.85 | 3.9 | 3.2 | 3.0 | 2.8 | 2.8 |
| 24 | 2.9 | 3.2 | 3.6 | 4.4 | 3.8 | 4.6 | 4.8 | 3.8 | 3.2 | 3.0 | 2.8 | 2.8 |
| 25 | 2.9 | 3.2 | 3.5 | 4.4 | 3.8 | 4.5 | 4.8 | 3.8 | 3.3 | 3.0 | 2.8 | 2.8 |
| 26 | 3.0 | 3.2 | 3.4 | 4.3 | 3.8 | 4.6 | 4.3 | 3.7 | 3.4 | 3.0 | 2.8 | 2.8 |
| 27 | 3.0 | 3.2 | 3.3 | 4.2 | 3.8 | 4.7 | 4.8 | 3.7 | 3.4 | 3.0 | 2.8 | 2.8 |
| 28 | 3.0 | 3.2 | 3.2 | 4.2 | 3.7 | 4.8 | 4.7 | 3.6 | 3.4 | 3.1 | 2.8 | 2.8 |
| 29 | 3.0 | 3.2 | 3.6 | 4.2 | ..... | 4.8 | 4.5 | 3.6 | 3.4 | 3.1 | 2.8 | 2.8 |
| 30 | 3.0 | 3.2 | 3.7 | 4.1 | ..... | 5.0 | 4.3 | 3.6 | 3.3 | 3.1 | 2.8 | 2.8 |
| 31 | 3.0 | ..... | 3.8 | 4.1 | ..... | 5.4 | ..... | 3.5 | ..... | 3.2 | 2.8 | ..... |

*Daily discharge, in second-feet, of Pit River near Ydalpom, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,740 | 3,030 | 3,330 | 3,940 | 4,600 | 3,940 | 8,120 | 4,940 | 3,940 | 3,480 | 3,330 | 2,740 |
| 2 | 2,740 | 3,030 | 3,330 | 3,780 | 4,600 | 3,940 | 9,170 | 4,940 | 3,630 | 3,330 | 3,330 | 2,740 |
| 3 | 2,740 | 3,030 | 3,180 | 3,630 | 4,770 | 3,940 | 9,390 | 4,940 | 3,630 | 3,330 | 3,330 | 2,740 |
| 4 | 2,740 | 3,030 | 3,180 | 3,630 | 4,770 | 4,260 | 9,610 | 4,940 | 3,630 | 3,330 | 3,330 | 2,740 |
| 5 | 2,740 | 3,180 | 3,180 | 3,630 | 4,600 | 4,260 | 10,100 | 4,770 | 3,630 | 3,330 | 3,330 | 2,740 |
| 6 | 2,740 | 7,520 | 3,030 | 3,480 | 4,600 | 4,600 | 9,170 | 4,770 | 3,630 | 3,330 | 3,330 | 2,740 |
| 8 | 2,740 | 4,430 | 3,030 | 3,330 | 4,600 | 4,940 | 8,330 | 5,460 | 3,480 | 3,330 | 3,180 | 2,740 |
| 8 | 2,740 | 3,940 | 3,030 | 3,480 | 4,600 | 5,280 | 7,720 | 5,280 | 3,480 | 3,330 | 3,180 | 2,740 |
| 9 | 2,740 | 4,600 | 3,030 | 3,630 | 4,600 | 5,280 | 7,120 | 4,940 | 3,480 | 3,330 | 3,180 | 2,740 |
| 10 | 2,740 | 4,430 | 3,030 | 3,940 | 4,600 | 5,820 | 6,740 | 4,770 | 3,330 | 3,180 | 3,030 | 2,740 |
| 11 | 2,740 | 4,260 | 3,030 | 4,260 | 4,600 | 6,180 | 6,740 | 4,770 | 3,330 | 3,180 | 3,030 | 2,740 |
| 12 | 2,740 | 3,630 | 3,030 | 4,260 | 4,600 | 6,000 | 6,740 | 5,110 | 3,330 | 3,180 | 3,030 | 2,740 |
| 13 | 2,740 | 3,780 | 3,030 | 4,430 | 4,600 | 5,640 | 6,740 | 4,940 | 3,330 | 3,180 | 3,030 | 2,740 |
| 14 | 2,740 | 3,780 | 3,480 | 6,550 | 4,600 | 6,000 | 6,550 | 4,600 | 3,330 | 3,030 | 2,880 | 2,740 |
| 15 | 2,740 | 3,940 | 3,480 | 6,930 | 4,600 | 6,000 | 6,550 | 4,600 | 3,330 | 3,030 | 2,880 | 2,740 |
| 16 | 2,740 | 3,940 | 6,180 | 6,740 | 4,600 | 5,820 | 6,180 | 4,600 | 3,330 | 3,030 | 2,880 | 2,740 |
| 17 | 2,740 | 3,780 | 6,360 | 6,180 | 4,600 | 5,640 | 6,180 | 4,600 | 3,330 | 3,030 | 2,880 | 2,740 |
| 18 | 2,740 | 3,630 | 6,000 | 18,400 | 4,600 | 5,640 | 6,360 | 5,460 | 3,330 | 3,030 | 2,880 | 2,740 |
| 19 | 2,740 | 3,630 | 5,280 | 11,900 | 4,600 | 5,820 | 6,360 | 5,280 | 3,330 | 3,030 | 2,880 | 2,740 |
| 20 | 2,740 | 3,630 | 4,600 | 6,740 | 4,600 | 6,000 | 6,360 | 4,940 | 3,330 | 3,030 | 2,740 | 2,740 |
| 21 | 2,740 | 3,480 | 4,260 | 6,180 | 4,600 | 6,180 | 6,360 | 4,940 | 3,330 | 3,030 | 2,740 | 2,740 |
| 22 | 2,740 | 3,480 | 3,940 | 5,640 | 4,600 | 7,520 | 6,180 | 4,600 | 3,330 | 3,030 | 2,740 | 2,740 |
| 23 | 2,740 | 3,480 | 3,940 | 5,460 | 4,600 | 5,640 | 6,090 | 4,430 | 3,330 | 3,030 | 2,740 | 2,740 |
| 24 | 2,880 | 3,330 | 3,940 | 5,280 | 4,260 | 5,640 | 6,000 | 4,260 | 3,330 | 3,030 | 2,740 | 2,740 |
| 25 | 2,880 | 3,330 | 3,780 | 5,280 | 4,260 | 5,460 | 6,000 | 4,260 | 3,480 | 3,030 | 2,740 | 2,740 |
| 26 | 3,030 | 3,330 | 3,630 | 5,110 | 4,260 | 5,640 | 6,000 | 4,100 | 3,630 | 3,030 | 2,740 | 2,740 |
| 27 | 3,030 | 3,330 | 3,480 | 4,940 | 4,260 | 5,820 | 6,000 | 4,100 | 3,630 | 3,030 | 2,740 | 2,740 |
| 28 | 3,030 | 3,330 | 3,330 | 4,940 | 4,100 | 6,000 | 5,820 | 3,940 | 3,630 | 3,180 | 2,740 | 2,740 |
| 29 | 3,030 | 3,330 | 3,940 | 4,940 | ..... | 6,000 | 5,460 | 3,940 | 3,630 | 3,180 | 2,740 | 2,740 |
| 30 | 3,030 | 3,330 | 4,100 | 4,770 | ..... | 6,360 | 5,110 | 3,940 | 3,480 | 3,180 | 2,740 | 2,740 |
| 31 | 3,030 | ..... | 4,260 | 4,770 | ..... | 7,120 | ..... | 3,780 | ..... | 3,330 | 2,740 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Pit River near Ydalpom, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 6,350 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 3,030 | 2,740 | 2,810 | 0.443 | 0.51 | 173,000 | A. |
| November | 7,520 | 3,030 | 3,730 | .587 | .65 | 222,000 | A. |
| December | 6,360 | 3,030 | 3,820 | .602 | .69 | 235,000 | A. |
| January | 18,400 | 3,330 | 5,490 | .865 | 1.00 | 338,000 | A. |
| February | 4,770 | 4,100 | 4,550 | .717 | .75 | 253,000 | A. |
| March | 7,520 | 3,940 | 5,560 | .876 | 1.01 | 342,000 | A. |
| April | 10,100 | 5,110 | 6,980 | 1.10 | 1.23 | 415,000 | A. |
| May | 5,460 | 3,780 | 4,680 | .737 | .85 | 288,000 | A. |
| June | 3,940 | 3,330 | 3,470 | .546 | .61 | 206,000 | A. |
| July | 3,480 | 3,030 | 3,170 | .499 | .58 | 195,000 | A. |
| August | 3,330 | 2,740 | 2,960 | .466 | .54 | 182,000 | A. |
| September | 2,740 | 2,740 | 2,740 | .431 | .48 | 163,000 | A. |
| The year | 18,400 | 2,740 | 4,160 | .655 | 8.90 | 3,010,000 | |

### DREWS CREEK RESERVOIR NEAR LAKEVIEW, OREG.

LOCATION.—Dam is in sec. 5, T. 40 S., R. 18 E., about 14 miles southwest of Lakeview; reservoir is about 10 miles in length.

RECORDS AVAILABLE.—February 26 to September 30, 1913.

GAGE.—Readings obtained by measuring down from the floor of the gate house. Gage datum is lowest contour of reservoir.

OUTLETS.—A tunnel with sill at elevation 16.3 feet, and a blow-out pipe in center of dam at bottom.

STORAGE.—Reservoir was filled up to outlet tunnel during winter of 1911–12, but was practically empty October 1, 1912. The rate of filling between that date and March 31, 1913, has been estimated.

ACCURACY.—Monthly estimates of increase or decrease in volume of storage are only approximate, as the readings of water stage are very rough, but the error for the entire year is probably not great.

*Daily gage height, in feet, of Drews Creek reservoir near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Feb. | Apr. | May. | June. | July. | Aug. | Day. | Feb. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 42.0 | | | | 16 | | | | | | |
| 2 | | | | | | 37.0 | 17 | | 37.8 | 37.5 | | | |
| 3 | | | 41.0 | | | | 18 | | | | | | |
| 4 | | | | | | | 19 | | | | | 37.0 | |
| 5 | | | | | 37.0 | | 20 | | | | | | |
| 6 | | | | | | | 21 | | | | 36.5 | | |
| 7 | | | | | | | 22 | | | | | | |
| 8 | | | | | | | 23 | | | | | | |
| 9 | | | | | | 37.0 | 24 | | | 35.0 | | | |
| 10 | | | 39.8 | 41.0 | | | 25 | | | | | | |
| 11 | | | | | | | 26 | 18.0 | 39.0 | | | 37.0 | |
| 12 | | 36.0 | | | | | 27 | | | | | | |
| 13 | | | | | | | 28 | | | | 37.0 | | |
| 14 | | | | | | | 29 | | | | | | |
| 15 | | | | | | | 30 | | | | | | |
| | | | | | | | 31 | | | 36.0 | | | |

*Storage in acre-feet in Drews Creek reservoir near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Month. | Total storage at end of month. | Increase in storage. | Month. | Total storage at end of month. | Increase in storage. |
|---|---|---|---|---|---|
| October | 0 | 0 | May | 9,290 | −9,710 |
| November | 0 | 0 | June | 10,740 | +1,450 |
| December | 200 | +200 | July | 10,740 | 0 |
| January | 300 | +100 | August | 9,700 | −1,040 |
| February | 580 | +200 | September | 7,960 | −1,740 |
| March | 6,000 | +5,500 | | | |
| April | 19,000 | +13,000 | The year | 7,960 | +7,960 |

### DREWS CREEK NEAR LAKEVIEW, OREG.

LOCATION.—In sec. 4, T. 40 S., R. 18 E., 1 mile below the Drews Creek dam and 13 miles southwest of Lakeview.

RECORDS AVAILABLE.—January 16, 1909, to September 13, 1913.

DRAINAGE AREA.—211 square miles.

GAGE.—Friez water-stage recorder since March 19, 1912, referred to vertical staff installed on highway bridge March 1, 1910. Inclined staff used at station No. 1 at dam site a mile above present gage, January 16 to May 31, 1909, and vertical staff at station No. 2 at a dump-car bridge 100 feet below the dam site, November 20, 1909, to February 28, 1910.

CHANNEL.—Gravel; somewhat shifting; at highest stages overflows into a second channel.

DISCHARGE MEASUREMENTS.—Made from a wagon bridge near the gage or by wading.

WINTER FLOW.—Winters are severe but the flow is so small during period when ice is present that very little error is introduced in the total estimates.

REGULATION.—Since the latter part of 1912 the reservoir of the Lakeview Irrigation & Power Co., just above the station, has been operated. Storage prior to that time was insufficient to materially affect the flow.

ACCURACY.—Records subject to considerable error on account of diurnal fluctuation. Present conditions favorable for good results.

COOPERATION.—Gage-height record furnished by Lakeview Irrigation & Power Co.

*Discharge measurements of Drews Creek near Lakeview, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Mar. 27 | Howard Kimble | 2.39 | 33.2 |
| Apr. 17 | do | 3.55 | 236 |

*Daily gage height, in feet, of Drews Creek near Lakeview, Oreg., for the year ending Sept. 13, 1913.*

[S. C. Campbell, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 2.00 | ..... | ..... | 1.85 | 1.60 | ..... | 3.58 | 1.88 | 1.87 | 1.95 | 1.97 |
| 2 | ..... | 2.02 | ..... | ..... | ..... | ..... | ..... | 3.58 | 1.88 | 1.87 | 1.96 | 1.97 |
| 3 | ..... | 2.04 | ..... | ..... | ..... | ..... | ..... | 3.60 | 1.88 | 1.87 | 1.97 | 1.95 |
| 4 | ..... | 2.03 | ..... | 1.85 | ..... | ..... | ..... | 3.64 | 1.88 | 1.87 | 1.98 | 1.95 |
| 5 | ..... | 2.01 | ..... | ..... | ..... | ..... | 2.80 | 3.66 | 1.88 | 1.87 | 1.98 | 1.94 |
| 6 | ..... | 2.02 | ..... | ..... | ..... | ..... | ..... | 3.78 | 1.87 | 1.87 | 1.99 | 1.94 |
| 7 | ..... | 2.02 | ..... | ..... | ..... | ..... | ..... | 3.77 | 2.02 | 1.87 | 1.99 | 1.96 |
| 8 | ..... | 2.02 | ..... | ..... | 1.85 | 1.80 | ..... | 3.76 | 1.86 | 1.87 | 1.99 | 1.98 |
| 9 | ..... | ..... | ..... | ..... | ..... | 1.87 | ..... | 3.75 | 1.85 | 1.88 | 1.98 | 2.04 |
| 10 | ..... | ..... | ..... | ..... | ..... | 2.19 | ..... | 3.75 | 1.84 | 1.88 | ..... | 2.06 |
| 11 | ..... | ..... | ..... | 1.85 | ..... | ..... | 3.30 | 3.74 | 1.84 | 1.88 | ..... | 2.51 |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... | 3.23 | 3.72 | 1.84 | 1.88 | ..... | 2.68 |
| 13 | ..... | ..... | ..... | ..... | ..... | ..... | 3.27 | 3.70 | 1.84 | 1.87 | ..... | 2.68 |
| 14 | ..... | ..... | ..... | ..... | ..... | ..... | 3.47 | 3.69 | 1.84 | 1.88 | ..... | 2.68 |
| 15 | ..... | ..... | ..... | ..... | 1.85 | 1.98 | 3.55 | 3.68 | 1.84 | 1.88 | ..... | 2.68 |
| 16 | ..... | ..... | ..... | ..... | ..... | 1.93 | 3.54 | 3.64 | 1.84 | 1.88 | ..... | 2.68 |
| 17 | ..... | 2.05 | ..... | ..... | ..... | 1.87 | 3.53 | 3.58 | 1.85 | 1.89 | ..... | 2.20 |
| 18 | ..... | 2.05 | ..... | 1.85 | ..... | 2.21 | 3.54 | 3.57 | 1.86 | 1.89 | ..... | 1.92 |
| 19 | ..... | 2.05 | ..... | ..... | ..... | 2.24 | 3.55 | 3.57 | 1.86 | 1.89 | ..... | 1.91 |
| 20 | ..... | 2.04 | ..... | ..... | ..... | 2.36 | 3.55 | 3.56 | 1.87 | 1.89 | ..... | 1.90 |
| 21 | ..... | 2.03 | ..... | ..... | ..... | 2.45 | 3.55 | 3.55 | 1.87 | 1.92 | ..... | 1.90 |
| 22 | ..... | 2.01 | ..... | ..... | 1.85 | 2.45 | 3.55 | 3.54 | 1.87 | 1.90 | ..... | 1.89 |
| 23 | ..... | 1.96 | ..... | ..... | ..... | 2.43 | 3.54 | 3.35 | 1.87 | 1.90 | ..... | 1.88 |
| 24 | ..... | 1.91 | ..... | ..... | ..... | 2.60 | 3.55 | 2.94 | 1.88 | 1.92 | ..... | 1.87 |
| 25 | ..... | ..... | ..... | 1.85 | ..... | 2.50 | 3.56 | 2.93 | 1.88 | 1.90 | ..... | 1.87 |
| 26 | ..... | ..... | ..... | ..... | 1.60 | 2.40 | 3.57 | 2.92 | 1.89 | 1.90 | ..... | 1.87 |
| 27 | ..... | ..... | ..... | ..... | ..... | 2.39 | 3.57 | 2.92 | 1.89 | 1.91 | ..... | 1.87 |
| 28 | ..... | ..... | ..... | ..... | ..... | 2.40 | 3.57 | 2.60 | 1.88 | 1.91 | ..... | 1.87 |
| 29 | ..... | ..... | 1.85 | ..... | ..... | 2.45 | 3.57 | 2.28 | 1.87 | 1.92 | ..... | 1.87 |
| 30 | ..... | ..... | 1.85 | ..... | ..... | ..... | 3.57 | 2.08 | 1.87 | 1.93 | ..... | 1.87 |
| 31 | ..... | ..... | 1.85 | ..... | ..... | ..... | ..... | 1.88 | ..... | 1.95 | 1.97 | ..... |

NOTE.—Float of recording gage frozen in well during winter months; readings are those recorded by observer at his weekly visits, and are probably to top of ice. Ice present in creek but no record as to how much and when.

*Daily discharge, in second-feet, of Drews Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 8 | 4 | 2 | 1 | 0 | 61 | 255 | 4 | 3 | 6 | 7 |
| 2 | 0 | 9 | 4 | 2 | 1 | 0 | 68 | 255 | 4 | 3 | 6 | 7 |
| 3 | 0 | 10 | 4 | 2 | 1 | 1 | 75 | 260 | 4 | 3 | 7 | 6 |
| 4 | 0 | 9 | 4 | 2 | 1 | 1 | 82 | 270 | 4 | 3 | 7 | 6 |
| 5 | 0 | 8 | 4 | 2 | 1 | 1 | 89 | 276 | 4 | 3 | 7 | 6 |
| 6 | 0 | 9 | 4 | 2 | 1 | 2 | 106 | 308 | 3 | 3 | 8 | 6 |
| 7 | 0 | 9 | 4 | 2 | 1 | 2 | 122 | 306 | 9 | 3 | 8 | 6 |
| 8 | 0 | 9 | 4 | 2 | 1 | 2 | 139 | 303 | 3 | 3 | 8 | 7 |
| 9 | 0 | 9 | 4 | 2 | 1 | 3 | 155 | 300 | 3 | 4 | 7 | 10 |
| 10 | 0 | 9 | 4 | 2 | 1 | 17 | 171 | 300 | 3 | 4 | ..... | 10 |
| 11 | 0 | 9 | 4 | 2 | 1 | 15 | 188 | 297 | 3 | 4 | ..... | 47 |
| 12 | 0 | 9 | 3 | 2 | 1 | 13 | 173 | 292 | 3 | 4 | ..... | 70 |
| 13 | 0 | 10 | 3 | 2 | 1 | 11 | 181 | 286 | 3 | 3 | ..... | 70 |
| 14 | 0 | 10 | 3 | 2 | 1 | 9 | 227 | 283 | 3 | 4 | ..... | 70 |
| 15 | 0 | 10 | 3 | 2 | 0 | 7 | 247 | 281 | 3 | 4 | ..... | 70 |
| 16 | 0 | 10 | 3 | 2 | 0 | 5 | 244 | 270 | 3 | 4 | ..... | 70 |
| 17 | 0 | 10 | 3 | 2 | 0 | 3 | 242 | 255 | 3 | 4 | ..... | 18 |
| 18 | 0 | 10 | 3 | 2 | 0 | 19 | 244 | 252 | 3 | 4 | ..... | 5 |
| 19 | 0 | 10 | 3 | 2 | 0 | 21 | 247 | 252 | 3 | 4 | ..... | 4 |
| 20 | 0 | 10 | 3 | 2 | 0 | 31 | 247 | 250 | 3 | 4 | ..... | 4 |
| 21 | 1 | 9 | 3 | 2 | 0 | 40 | 247 | 247 | 3 | 5 | ..... | 4 |
| 22 | 1 | 8 | 3 | 2 | 0 | 40 | 247 | 244 | 3 | 4 | ..... | 4 |
| 23 | 2 | 6 | 3 | 2 | 0 | 38 | 244 | 199 | 3 | 4 | ..... | 4 |
| 24 | 3 | 4 | 3 | 1 | 0 | 59 | 247 | 113 | 4 | 5 | ..... | 3 |
| 25 | 3 | 4 | 3 | 1 | 0 | 46 | 250 | 111 | 4 | 4 | ..... | 3 |
| 26 | 4 | 4 | 3 | 1 | 0 | 35 | 252 | 110 | 4 | 4 | ..... | 3 |
| 27 | 5 | 4 | 3 | 1 | 0 | 34 | 252 | 110 | 4 | 4 | ..... | 3 |
| 28 | 5 | 4 | 3 | 1 | 0 | 35 | 252 | 59 | 4 | 4 | ..... | 3 |
| 29 | 6 | 4 | 3 | 1 | ..... | 40 | 252 | 24 | 3 | 5 | ..... | 3 |
| 30 | 7 | 4 | 3 | 1 | ..... | 47 | 252 | 11 | 3 | 5 | ..... | 3 |
| 31 | 7 | ..... | 3 | 1 | ..... | 54 | ..... | 4 | ..... | 6 | ..... | ..... |

NOTE.—Discharge determined from rating curve well defined for earlier part of year, but not defined for later part. Discharge interpolated or estimated for days when gage was not read. Mean discharge Aug. 10–30, estimated at 7 second-feet, but may have been more than this, as flow is entirely controlled by reservoir above.

*Monthly discharge of Drews Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | ..... | ..... | 1.4 | 86 | D. |
| November | ..... | ..... | 7.9 | 470 | D. |
| December | ..... | ..... | 3.4 | 209 | D. |
| January | ..... | ..... | 1.7 | 105 | D. |
| February | ..... | ..... | .5 | 28 | D. |
| March | 59 | 0 | 20.4 | 1,250 | C. |
| April | 252 | 61 | 193 | 11,500 | B. |
| May | 308 | 4 | 219 | 13,500 | A. |
| June | 9 | 3 | 3.5 | 208 | B. |
| July | 6 | 3 | 3.9 | 240 | B. |
| August | ..... | ..... | 7.0 | 430 | C. |
| September | 70 | 3 | 17.7 | 1,050 | B. |
| The year | 308 | 0 | 40.1 | 29,100 | |

### DOG CREEK NEAR LAKEVIEW, OREG.

LOCATION.—In sec. 11, T. 40 S., R. 17 E., about 1½ miles below outlet of Dog Lake, 1 mile below mouth of Horseshoe Creek, about 23 miles by road southwest of Lakeview.

RECORDS AVAILABLE.—March 20, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Barrett and Lawrence water-stage recorder used in connection with a vertical staff.

CHANNEL.—Rocks and gravel. Rock riffle just below the gage.

DISCHARGE MEASUREMENTS.—Usually made by wading. At extremely high stages measurements may be made from a foot-log half a mile below the gage.

ACCURACY.—Conditions good; results reliable except when gage-height records are fragmentary.

COOPERATION.—Station maintained in cooperation with Lakeview Irrigation & Power Co.

*Discharge measurements of Dog Creek near Lakeview, Oreg., during the year ending Sept. 30, 1913.*

[Made by Howard Kimble.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Mar. 27 | [a] 0.72 | 1.3 | May 19 | .88 | 5.10 |
| Apr. 17 | 1.42 | 24.6 | | | |

[a] Discharge relation probably affected by ice.

*Daily gage height, in feet, of Dog Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Day | Mar. | Apr. | May. | June. | Day. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1.49 | 1.38 | 0.56 | 16 | ..... | 1.52 | ..... | ..... |
| 2 | ..... | 1.40 | 1.16 | .57 | 17 | ..... | 1.60 | ..... | ..... |
| 3 | ..... | 1.31 | 1.14 | .56 | 18 | ..... | 1.64 | ..... | ..... |
| 4 | ..... | 1.31 | 1.12 | .58 | 19 | ..... | 1.72 | 0.88 | ..... |
| 5 | ..... | 1.18 | 1.11 | .56 | 20 | ..... | 1.88 | .83 | ..... |
| 6 | ..... | 1.19 | ..... | .55 | 21 | ..... | 1.92 | .76 | ..... |
| 7 | ..... | 1.21 | ..... | .60 | 22 | ..... | 1.84 | .70 | ..... |
| 8 | ..... | 1.32 | ..... | .62 | 23 | ..... | 1.83 | .70 | ..... |
| 9 | ..... | 1.37 | ..... | .62 | 24 | ..... | 1.86 | .70 | ..... |
| 10 | ..... | 1.52 | ..... | .51 | 25 | ..... | 1.89 | .70 | ..... |
| 11 | ..... | 1.62 | ..... | .50 | 26 | ..... | 1.80 | .67 | ..... |
| 12 | ..... | 1.67 | ..... | ..... | 27 | 0.70 | 1.68 | .65 | ..... |
| 13 | ..... | 1.56 | ..... | ..... | 28 | .72 | 1.60 | .66 | ..... |
| 14 | ..... | 1.60 | ..... | ..... | 29 | 1.02 | 1.55 | .64 | ..... |
| 15 | ..... | 1.52 | ..... | ..... | 30 | 1.48 | 1.45 | .60 | ..... |
| | | | | | 31 | 1.52 | ..... | .59 | ..... |

NOTE.—The maximum gage height May 5 to 19 was 1.42 feet. Creek bed dry until March 3 and after about June 11.

*Daily discharge, in second feet, of Dog Creek near Lakeview, Oreg., for the years ending Sept. 30, 1912–13.*

| Day. | Mar. | Apr. | May. | June. | July. | Day. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | 1912. | | | | | |
| 1 | | 17 | 37 | 14 | 4.4 | 16 | | 19 | 33 | 15 | 1.0 |
| 2 | | 17 | 34 | 11 | 4.0 | 17 | | 17 | 31 | 14 | .9 |
| 3 | | 14 | 34 | 9.2 | 3.7 | 18 | | 14 | 28 | 13 | .8 |
| 4 | | 11 | 33 | 19 | 3.3 | 19 | | 12 | 26 | 13 | .8 |
| 5 | | 15 | 35 | 34 | 3.0 | 20 | | 9 | 24 | 13 | .7 |
| 6 | | 19 | 40 | 33 | 2.6 | 21 | 2.1 | 6.3 | 22 | 11 | .6 |
| 7 | | 23 | 42 | 32 | 2.3 | 22 | 3.1 | 6.9 | 19 | 9.9 | .6 |
| 8 | | 26 | 43 | 29 | 1.9 | 23 | 5.7 | 9.2 | 17 | 8.9 | .5 |
| 9 | | 30 | 45 | 28 | 1.6 | 24 | 5.2 | 11 | 15 | 8.0 | .4 |
| 10 | | 34 | 46 | 25 | 1.2 | 25 | 7.4 | 11 | 16 | 7.2 | .4 |
| 11 | | 32 | 44 | 23 | 1.4 | 26 | 8.9 | 11 | 18 | 6.3 | .3 |
| 12 | | 29 | 42 | 22 | 1.3 | 27 | 11 | 19 | 19 | 5.7 | .2 |
| 13 | | 27 | 39 | 21 | 1.2 | 28 | 13 | 33 | 20 | 5.2 | .2 |
| 14 | | 24 | 37 | 19 | 1.1 | 29 | 10 | 36 | 22 | 5.0 | .1 |
| 15 | | 22 | 35 | 17 | 1.0 | 30 | 9.2 | 40 | 23 | 4.7 | 0 |
| | | | | | | 31 | 14 | ..... | 17 | ..... | 0 |

| Day. | Mar. | Apr. | May. | June. | Day. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1913. | | | | | 1913. | | | | |
| 1 | ..... | 28 | 23 | 0.5 | 16 | ..... | 30 | 6 | 0 |
| 2 | ..... | 24 | 14 | .6 | 17 | ..... | 34 | 5 | 0 |
| 3 | ..... | 20 | 13 | .5 | 18 | ..... | 36 | 5 | 0 |
| 4 | ..... | 20 | 12 | .6 | 19 | ..... | 41 | 5.2 | 0 |
| 5 | ..... | 15 | 12 | .5 | 20 | ..... | 51 | 4.0 | 0 |
| 6 | ..... | 15 | 12 | .5 | 21 | ..... | 53 | 2.6 | 0 |
| 7 | ..... | 16 | 12 | .7 | 22 | ..... | 48 | 1.6 | 0 |
| 8 | ..... | 20 | 14 | .9 | 23 | ..... | 48 | 1.6 | 0 |
| 9 | ..... | 22 | 20 | .9 | 24 | ..... | 50 | 1.6 | 0 |
| 10 | ..... | 30 | 25 | .3 | 25 | ..... | 51 | 1.6 | 0 |
| 11 | ..... | 35 | 21 | .3 | 26 | ..... | 46 | 1.3 | 0 |
| 12 | ..... | 38 | 16 | 0 | 27 | 1.6 | 39 | 1.2 | 0 |
| 13 | ..... | 32 | 12 | 0 | 28 | 1.9 | 34 | 1.2 | 0 |
| 14 | ..... | 34 | 8 | 0 | 29 | 9.2 | 32 | 1.1 | 0 |
| 15 | ..... | 30 | 6 | 0 | 30 | 28 | 26 | .7 | 0 |
| | | | | | 31 | 30 | ..... | .7 | ..... |

NOTE.—Daily discharge determined from rating curve well defined between 1 and 30 second-feet; interpolated for days for which gage-height record is not available. Mean discharge Mar. 3–26, 1913, estimated at 1 second-foot.

*Monthly discharge of Dog Creek near Lakeview, Oreg., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| March 21–31 | 14 | 2.1 | 8.15 | 178 | B. |
| April | 40 | 6.3 | 19.8 | 1,180 | C. |
| May | 46 | 15 | 30.2 | 1,860 | C. |
| June | 34 | 4.7 | 15.9 | 946 | A. |
| July | 4.4 | 0 | 1.34 | 82 | C. |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The period | ..... | ..... | ..... | 4,250 | |
| 1913. | | | | | |
| October | 0 | 0 | 0 | 0 | |
| November | 0 | 0 | 0 | 0 | |
| December | 0 | 0 | 0 | 0 | |
| January | 0 | 0 | 0 | 0 | |
| February | 0 | 0 | 0 | 0 | |
| March | 30 | 0 | 3.05 | 188 | C. |
| April | 53 | 15 | 33.3 | 1,980 | B. |
| May | 25 | .7 | 8.40 | 516 | C. |
| June | .9 | 0 | .21 | 12.5 | |
| July | 0 | 0 | 0 | 0 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 53 | 0 | 3.72 | 2,700 | |

### COTTONWOOD CREEK NEAR LAKEVIEW, OREG.

LOCATION.—In the SW. ¼ sec. 29, T. 38 S., R. 19 E., about one-half mile below a proposed storage reservoir, 10 miles northwest of Lakeview.

RECORDS AVAILABLE.—November 22, 1908, to September 30, 1913.

DRAINAGE AREA.—30 square miles.

GAGE.—Vertical staff installed March 23, 1912; from November 22, 1908, to January 18, 1909, a gage just above a weir one-fourth mile below the dam site was used; January 19, 1909, to March 22, 1912, inclined staff at present location.

CHANNEL.—Clean gravel; fairly permanent; 10-foot weir November 22, 1908, to January 16, 1909; 15-foot weir January 17 and 18, 1909.

DISCHARGE MEASUREMENTS.—Made from a footbridge 40 feet below present gage or by wading.

WINTER FLOW.—Discharge relation at times affected by ice but flow during winter is so small that no serious errors are introduced into the yearly estimates.

DIVERSIONS.—None above station.

ACCURACY.—Results fairly reliable but subject to some uncertainty in early spring owing to large diurnal fluctuation when snow is melting.

COOPERATION.—Station maintained in cooperation with the Lakeview Irrigation & Power Co., which furnishes gage-height record.

*Discharge measurements of Cottonwood Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

[Made by Howard Kimble.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Feb. 21 | 0.31 | 7.1 |
| Mar. 13 | .60 | 15.0 |
| Apr. 18 | 1.61 | 88.3 |

*Daily gage height, in feet, of Cottonwood Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

[C. B. Mellott, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.21 | 0.28 | 0.34 | 0.18 | 0.24 | 0.30 | 1.60 | 1.50 | 0.90 | 0.62 | 0.40 | 0.30 |
| 2 | .24 | .31 | .56 | ..... | .14 | .22 | 1.60 | 1.35 | .81 | .62 | .40 | .30 |
| 3 | .21 | .24 | .41 | ..... | .11 | .20 | 1.20 | 1.60 | .90 | .60 | .40 | .32 |
| 4 | .24 | .24 | .36 | ..... | .11 | .28 | 1.30 | 1.80 | 1.00 | .60 | .42 | .30 |
| 5 | .24 | .26 | .54 | ..... | ..... | .32 | 1.10 | 1.60 | 1.05 | .58 | .40 | .30 |
| 6 | .21 | .28 | .38 | ..... | ..... | .28 | 1.55 | 1.25 | 1.00 | .62 | .42 | .28 |
| 7 | .18 | .31 | .48 | ..... | ..... | .32 | 1.30 | .95 | 1.15 | .52 | .48 | .30 |
| 8 | .21 | .34 | .54 | ..... | ..... | .40 | 1.90 | .82 | .92 | .52 | .40 | .28 |
| 9 | .24 | .34 | .38 | ..... | ..... | .95 | 1.50 | 1.50 | .92 | .52 | .42 | .28 |
| 10 | .24 | .34 | .46 | ..... | ..... | .85 | 1.60 | 2.05 | .88 | .88 | .42 | .28 |
| 11 | .21 | .31 | .48 | ..... | ..... | 1.20 | 2.00 | 2.20 | .95 | .80 | .40 | .28 |
| 12 | .21 | .31 | .54 | ..... | ..... | 1.10 | 1.90 | 1.25 | .82 | .72 | .38 | .28 |
| 13 | .21 | .28 | .44 | ..... | ..... | .92 | 2.20 | 1.35 | .75 | .70 | .40 | .28 |
| 14 | .21 | .31 | .54 | ..... | ..... | .70 | 1.90 | 1.20 | .90 | .65 | .39 | .28 |
| 15 | .20 | .34 | .46 | ..... | ..... | .50 | 1.85 | 1.55 | .82 | .70 | .36 | .25 |
| 16 | .21 | .34 | .68 | ..... | ..... | .58 | 1.35 | 1.50 | .72 | .68 | .32 | .25 |
| 17 | .24 | .34 | .46 | ..... | ..... | .40 | .95 | 1.30 | .62 | .60 | .32 | .25 |
| 18 | .18 | .34 | .51 | ..... | ..... | .40 | 1.60 | 1.30 | .60 | .59 | .30 | .22 |
| 19 | .21 | .31 | .44 | ..... | ..... | .52 | 1.40 | 1.25 | .65 | .50 | .30 | .22 |
| 20 | .24 | .36 | .38 | ..... | ..... | .82 | 1.50 | 1.30 | .60 | .50 | .30 | .20 |
| 21 | .26 | .41 | .36 | ..... | .31 | .70 | 1.35 | 1.05 | .58 | .58 | .32 | .25 |
| 22 | .24 | .36 | .31 | ..... | ..... | .50 | 2.05 | .95 | .50 | .52 | .30 | .28 |
| 23 | .24 | .38 | .34 | ..... | ..... | .60 | 1.80 | 1.20 | .90 | .55 | .30 | .28 |
| 24 | .21 | .41 | .38 | .24 | ..... | .35 | 1.80 | 1.00 | .82 | 1.35 | .32 | .28 |
| 25 | .24 | .42 | .46 | .26 | .10 | .32 | 2.20 | 1.10 | .62 | .90 | .30 | .28 |
| 26 | .24 | .38 | .34 | .26 | .15 | .38 | 2.05 | 1.50 | .60 | .78 | .30 | .22 |
| 27 | .24 | .38 | .38 | ..... | .25 | .40 | 2.00 | 1.40 | .68 | .72 | .30 | .22 |
| 28 | .26 | .38 | .34 | .16 | .30 | .30 | 1.80 | 1.05 | .75 | .65 | .32 | .22 |
| 29 | .26 | .31 | .41 | .18 | ..... | .40 | 1.45 | 1.00 | .70 | .50 | .30 | .20 |
| 30 | .24 | .26 | .48 | .28 | ..... | 1.55 | .95 | 1.10 | .65 | .51 | .30 | .20 |
| 31 | .28 | ..... | .46 | .34 | ..... | 1.90 | ..... | .88 | ..... | .48 | .30 | ..... |

NOTE.—Creek covered with thick ice all winter. Apparently this was an ice roof caused by blocking of stream with anchor ice early in the morning and gage readings, made usually in the afternoon when the anchor ice had melted, were not affected.

*Daily discharge, in second-feet, of Cottonwood Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 5 | 7 | 3 | 4 | 6 | 87 | 78 | 32 | 16 | 7 | 4 |
| 2 | 4 | 6 | 16 | 3 | 2 | 4 | 87 | 66 | 27 | 16 | 7 | 4 |
| 3 | 3 | 4 | 9 | 3 | 2 | 3 | 54 | 87 | 32 | 15 | 7 | 5 |
| 4 | 4 | 4 | 8 | 3 | 2 | 5 | 62 | 107 | 39 | 15 | 8 | 4 |
| 5 | 4 | 5 | 15 | 3 | 2 | 7 | 46 | 87 | 42 | 14 | 7 | 4 |
| 6 | 3 | 5 | 8 | 3 | 2 | 5 | 82 | 58 | 39 | 16 | 8 | 4 |
| 7 | 3 | 6 | 12 | 3 | 2 | 7 | 62 | 36 | 50 | 12 | 10 | 4 |
| 8 | 3 | 7 | 15 | 3 | 2 | 9 | 118 | 27 | 33 | 12 | 7 | 4 |
| 9 | 4 | 7 | 8 | 3 | 3 | 40 | 78 | 78 | 33 | 12 | 8 | 4 |
| 10 | 4 | 7 | 11 | 3 | 3 | 33 | 87 | 136 | 31 | 31 | 8 | 4 |
| 11 | 3 | 6 | 12 | 3 | 3 | 58 | 130 | 154 | 36 | 26 | 7 | 4 |
| 12 | 3 | 6 | 15 | 3 | 3 | 46 | 118 | 58 | 27 | 21 | 6 | 4 |
| 13 | 3 | 5 | 11 | 4 | 4 | 33 | 154 | 66 | 23 | 20 | 7 | 4 |
| 14 | 3 | 6 | 15 | 4 | 4 | 20 | 118 | 54 | 32 | 18 | 7 | 4 |
| 15 | 3 | 7 | 11 | 4 | 4 | 11 | 112 | 82 | 27 | 20 | 6 | 3 |
| 16 | 3 | 7 | 23 | 4 | 4 | 14 | 66 | 78 | 21 | 19 | 5 | 3 |
| 17 | 4 | 7 | 11 | 4 | 5 | 7 | 36 | 62 | 16 | 15 | 5 | 3 |
| 18 | 3 | 7 | 14 | 4 | 5 | 7 | 87 | 62 | 15 | 15 | 4 | 2 |
| 19 | 3 | 6 | 11 | 4 | 6 | 12 | 70 | 58 | 18 | 11 | 4 | 2 |
| 20 | 4 | 8 | 8 | 4 | 6 | 27 | 78 | 62 | 15 | 11 | 4 | 2 |
| 21 | 5 | 9 | 8 | 4 | 6 | 20 | 66 | 42 | 14 | 14 | 5 | 3 |
| 22 | 4 | 8 | 6 | 4 | 4 | 11 | 136 | 36 | 11 | 12 | 4 | 4 |
| 23 | 4 | 8 | 7 | 4 | 3 | 15 | 107 | 54 | 32 | 13 | 4 | 4 |
| 24 | 3 | 9 | 8 | 4 | 2 | 6 | 107 | 39 | 27 | 66 | 5 | 4 |
| 25 | 4 | 10 | 11 | 5 | 1 | 5 | 154 | 46 | 16 | 32 | 4 | 4 |
| 26 | 4 | 8 | 7 | 5 | 2 | 6 | 136 | 78 | 15 | 25 | 4 | 2 |
| 27 | 4 | 8 | 8 | 4 | 4 | 7 | 130 | 70 | 19 | 21 | 4 | 2 |
| 28 | 5 | 8 | 7 | 2 | 6 | 4 | 107 | 42 | 23 | 18 | 5 | 2 |
| 29 | 5 | 6 | 9 | 3 | ------ | 7 | 74 | 39 | 20 | 11 | 4 | 2 |
| 30 | 4 | 5 | 12 | 5 | ------ | 82 | 36 | 46 | 18 | 11 | 4 | 2 |
| 31 | 5 | ------ | 11 | 7 | ------ | 118 | ------ | 31 | ------ | 10 | 4 | ------ |

NOTE.—Discharge determined from rating curves as follows: Oct. 1 to Mar. 11, well defined between 2 and 130 second-feet; Mar. 12 to Sept. 30, well defined between 5 and 130 second-feet. Curve for open channel applied throughout winter period and estimates may be too large. Discharge interpolated for days when gage was not read.

*Monthly discharge of Cottonwood Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 5 | 3 | 3.7 | 228 | B. |
| November | 10 | 4 | 6.7 | 399 | B. |
| December | 23 | 6 | 10.8 | 664 | B. |
| January | 7 | 3 | 3.7 | 228 | C. |
| February | 6 | 1 | 3.4 | 189 | C. |
| March | 118 | 3 | 20.5 | 1,260 | C. |
| April | 154 | 36 | 92.8 | 5,520 | C. |
| May | 154 | 27 | 65.1 | 4,000 | B. |
| June | 50 | 11 | 26.1 | 1,550 | B. |
| July | 66 | 10 | 18.3 | 1,130 | B. |
| August | 10 | 4 | 5.8 | 357 | B. |
| September | 5 | 2 | 3.4 | 202 | B. |
| The year | 154 | 1 | 21.7 | 15,700 | |

### THOMAS CREEK NEAR LAKEVIEW OREG.

LOCATION.—In sec. 22, T. 38 S., R. 19 E., about 8 miles below the proposed Thomas Creek reservoir, and about 10 miles northwest of Lakeview.

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff. Gage installed January 1 was influenced by backwater from a dam, and new vertical staff was installed March 9, 1912, 300 feet above old one and set to read same.

CHANNEL.—Sand, gravel, and yellow clay; shifting.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage or by wading.

ACCURACY.—Owing to shifting of channel results are only fair.

COOPERATION.—Station maintained in cooperation with Lakeview Irrigation & Power Co.

*Discharge measurements of Thomas Creek near Lakeview during the year ending Sept. 30, 1913.*

[Made by Howard Kimble.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Feb. 27 | 1.25 | 5.2 | Apr. 10 | 2.30 | 97.6 |
| Mar. 31 | 1.43 | 15.8 | | | |

*Daily gage height, in feet, of Thomas Creek near Lakeview, Oreg., for the year ending Sept. 30, 1913.*

[George Wright, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | ..... | ..... | ..... | ..... | ..... | 1.50 | 1.80 | ..... | 1.30 | ..... | ..... |
| 2 | ..... | ..... | ..... | ..... | ..... | ..... | 1.48 | 1.75 | 1.48 | ..... | 1.30 | 1.22 |
| 3 | ..... | 1.28 | 1.30 | ..... | ..... | ..... | 1.45 | 1.68 | 1.48 | 1.35 | ..... | ..... |
| 4 | 1.25 | ..... | ..... | ..... | 1.30 | 1.05 | 1.50 | 1.82 | 1.50 | ..... | ..... | ..... |
| 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.88 | 1.48 | ..... | 1.30 | ..... |
| 6 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.90 | ..... | ..... | ..... | 1.22 |
| 7 | ..... | ..... | 1.30 | ..... | 1.30 | 1.30 | ..... | 2.05 | 1.45 | 1.30 | ..... | ..... |
| 8 | ..... | ..... | ..... | ..... | 1.30 | ..... | 1.62 | 1.95 | ..... | ..... | ..... | ..... |
| 9 | ..... | ..... | ..... | 1.30 | ..... | ..... | 1.75 | 2.00 | 1.45 | ..... | 1.28 | 1.22 |
| 10 | 1.28 | 1.40 | ..... | ..... | ..... | 1.38 | 1.90 | 1.90 | ..... | 1.28 | ..... | ..... |
| 11 | ..... | ..... | ..... | 1.30 | 1.30 | ..... | 1.95 | 1.95 | 1.40 | ..... | ..... | ..... |
| 12 | 1.25 | 1.38 | 1.30 | ..... | ..... | 1.28 | 2.25 | 1.85 | ..... | 1.25 | 1.28 | ..... |
| 13 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.80 | 1.38 | ..... | ..... | 1.22 |
| 14 | ..... | ..... | 1.32 | 1.30 | 1.30 | 1.38 | ..... | 1.70 | 1.32 | ..... | ..... | ..... |
| 15 | ..... | 1.35 | ..... | ..... | ..... | 1.28 | 1.90 | 1.70 | ..... | 1.25 | 1.28 | ..... |
| 16 | 1.25 | ..... | ..... | ..... | ..... | ..... | 1.78 | 1.70 | 1.30 | ..... | ..... | 1.22 |
| 17 | ..... | ..... | 1.30 | ..... | ..... | 1.30 | 2.10 | 1.78 | ..... | 1.22 | ..... | ..... |
| 18 | ..... | ..... | ..... | ..... | 1.32 | ..... | 2.20 | 1.90 | 1.30 | ..... | ..... | ..... |
| 19 | 1.28 | ..... | ..... | ..... | ..... | 1.30 | 2.00 | 1.80 | ..... | 1.22 | 1.28 | ..... |
| 20 | ..... | 1.30 | ..... | ..... | 1.32 | ..... | 2.30 | 1.80 | 1.30 | ..... | ..... | 1.22 |
| 21 | ..... | ..... | 1.30 | 1.30 | ..... | 1.30 | 2.20 | 1.70 | ..... | ..... | ..... | ..... |
| 22 | ..... | ..... | ..... | ..... | 1.32 | ..... | 2.20 | 1.75 | ..... | ..... | ..... | ..... |
| 23 | ..... | ..... | 1.30 | ..... | ..... | ..... | 1.95 | 1.75 | 1.30 | ..... | 1.28 | 1.20 |
| 24 | 1.28 | ..... | ..... | 1.30 | ..... | ..... | 2.10 | 1.80 | ..... | 1.55 | ..... | ..... |
| 25 | ..... | 1.28 | ..... | ..... | 1.32 | 1.28 | 2.25 | ..... | 1.30 | ..... | 1.25 | ..... |
| 26 | 1.28 | ..... | ..... | ..... | ..... | 1.32 | 2.20 | ..... | 1.35 | 1.50 | ..... | ..... |
| 27 | ..... | 1.30 | ..... | ..... | 1.25 | ..... | 2.35 | ..... | 1.45 | ..... | ..... | 1.20 |
| 28 | ..... | ..... | 1.30 | 1.30 | 1.28 | 1.30 | ..... | 1.78 | 1.40 | 1.40 | ..... | ..... |
| 29 | ..... | ..... | ..... | ..... | ..... | 1.32 | 1.90 | 1.70 | ..... | ..... | ..... | ..... |
| 30 | ..... | 1.30 | ..... | ..... | ..... | ..... | 1.82 | 1.62 | ..... | 1.32 | 1.22 | 1.20 |
| 31 | ..... | ..... | ..... | 1.30 | ..... | ..... | ..... | 1.58 | ..... | ..... | ..... | ..... |

NOTE.—No ice forms at this station owing to springs above the gage. Old gage at bridge read Dec. 1 to Feb. 25.

*Daily discharge, in second-feet, of Thomas Creek near Lakeview, Oreg., for the years ending Sept. 30, 1912–13.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | | |
| 1 | 12 | 18 | 14 | 37 | 40 | 54 | 14 | 5.6 | 4.0 |
| 2 | 11 | 18 | 4.2 | 40 | 40 | 52 | 13 | 5.9 | 4.4 |
| 3 | 10 | 18 | 4.6 | 43 | 48 | 50 | 12 | 6.2 | 4.7 |
| 4 | 10 | 18 | 5.1 | 39 | 68 | 48 | 11 | 6.2 | 5.1 |
| 5 | 10 | 18 | 5.5 | 33 | 65 | 45 | 11 | 6.2 | 5.5 |
| 6 | 10 | 18 | 6.0 | 35 | 62 | 43 | 10 | 6.2 | 5.8 |
| 7 | 10 | 18 | 6.0 | 44 | 63 | 40 | 9.8 | 6.2 | 6.2 |
| 8 | 10 | 20 | 6.0 | 54 | 68 | 38 | 9.3 | 6.5 | 6.2 |
| 9 | 9 | 23 | 6.0 | 66 | 85 | 35 | 8.7 | 6.7 | 6.2 |
| 10 | 9 | 25 | 6.0 | 73 | 98 | 32 | 8.2 | 7.0 | 6.2 |
| 11 | 12 | 25 | 6.1 | 45 | 95 | 30 | 7.6 | 6.2 | 6.2 |
| 12 | 14 | 24 | 6.2 | 42 | 92 | 27 | 6.9 | 5.4 | 6.2 |
| 13 | 16 | 23 | 6.2 | 33 | 88 | 43 | 6.3 | 4.6 | 6.2 |
| 14 | 16 | 23 | 5.8 | 34 | 88 | 45 | 5.7 | 3.8 | 6.2 |
| 15 | 16 | 24 | 5.4 | 35 | 79 | 35 | 5.0 | 3.0 | 6.2 |
| 16 | 15 | 24 | 5.0 | 35 | 73 | 32 | 4.4 | 3.0 | 5.6 |
| 17 | 15 | 25 | 5.1 | 35 | 75 | 29 | 3.8 | 3.0 | 5.0 |
| 18 | 10 | 35 | 5.2 | 38 | 79 | 26 | 4.1 | 3.0 | 4.4 |
| 19 | 4 | 24 | 5.3 | 34 | 74 | 23 | 4.4 | 3.0 | 3.8 |
| 20 | 10 | 18 | 5.4 | 30 | 68 | 20 | 4.7 | 3.0 | 4.0 |
| 21 | 11 | 12 | 6.0 | 28 | 63 | 20 | 5.0 | 3.0 | 4.2 |
| 22 | 13 | 10 | 6.5 | 26 | 60 | 19 | 5.3 | 3.0 | 4.4 |
| 23 | 15 | 8 | 7.0 | 26 | 50 | 18 | 5.6 | 3.0 | 4.6 |
| 24 | 16 | 6 | 8.2 | 32 | 45 | 18 | 5.9 | 3.0 | 4.8 |
| 25 | 20 | 6 | 9.4 | 31 | 58 | 17 | 6.2 | 3.0 | 5.0 |
| 26 | 16 | 6 | 11 | 39 | 60 | 16 | 6.2 | 3.0 | 5.0 |
| 27 | 12 | 6 | 12 | 28 | 62 | 16 | 6.2 | 3.0 | 5.0 |
| 28 | 13 | 6 | 18 | 33 | 60 | 16 | 5.8 | 3.0 | 5.0 |
| 29 | 15 | 10 | 25 | 37 | 62 | 15 | 5.4 | 3.0 | 5.0 |
| 30 | 17 | ..... | 31 | 42 | 62 | 14 | 5.0 | 3.3 | 5.0 |
| 31 | 18 | ..... | 34 | ..... | 60 | ..... | 5.3 | 3.7 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 5.0 | 6.2 | 6.7 | 6.0 | 6.0 | 5.0 | 20 | 43 | 22 | 7.0 | 7.6 | 3.8 |
| 2 | 5.0 | 6.2 | 6.3 | 6.0 | 6.0 | 3.7 | 19 | 39 | 19 | 8.5 | 7.0 | 3.8 |
| 3 | 5.0 | 6.2 | 6.0 | 6.0 | 6.0 | 2.4 | 16 | 33 | 19 | 10 | 7.0 | 3.8 |
| 4 | 5.0 | 7.2 | 6.0 | 6.0 | 6.0 | 1.2 | 20 | 45 | 20 | 9.2 | 7.0 | 3.8 |
| 5 | 5.2 | 8.2 | 6.0 | 6.0 | 6.0 | 3.1 | 22 | 50 | 19 | 8.6 | 7.0 | 3.8 |
| 6 | 5.4 | 9.1 | 6.0 | 6.0 | 6.0 | 5.0 | 24 | 52 | 18 | 7.8 | 6.8 | 3.8 |
| 7 | 5.6 | 10 | 6.0 | 6.0 | 6.0 | 7.0 | 27 | 68 | 16 | 7.0 | 6.6 | 3.8 |
| 8 | 5.8 | 11 | 6.0 | 6.0 | 6.0 | 8.7 | 29 | 57 | 16 | 6.7 | 6.4 | 3.8 |
| 9 | 6.0 | 12 | 6.0 | 6.0 | 6.0 | 10 | 39 | 62 | 16 | 6.5 | 6.2 | 3.8 |
| 10 | 6.2 | 13 | 6.0 | 6.0 | 6.0 | 12 | 52 | 52 | 14 | 6.2 | 6.2 | 3.8 |
| 11 | 5.6 | 12 | 6.0 | 6.0 | 6.0 | 9.0 | 57 | 57 | 13 | 5.6 | 6.2 | 3.8 |
| 12 | 5.0 | 12 | 6.0 | 6.0 | 6.0 | 6.2 | 92 | 48 | 12 | 5.0 | 6.2 | 3.8 |
| 13 | 5.0 | 11 | 6.5 | 6.0 | 6.0 | 9.0 | 79 | 43 | 12 | 5.0 | 6.2 | 3.8 |
| 14 | 5.0 | 11 | 7.0 | 6.0 | 6.0 | 12 | 65 | 36 | 8.2 | 5.0 | 6.2 | 3.8 |
| 15 | 5.0 | 10 | 6.7 | 6.0 | 6.0 | 6.2 | 52 | 35 | 7.6 | 5.0 | 6.2 | 3.8 |
| 16 | 5.0 | 9.4 | 6.3 | 6.0 | 6.0 | 6.6 | 41 | 35 | 7.0 | 4.4 | 6.2 | 3.8 |
| 17 | 5.4 | 8.8 | 6.0 | 6.0 | 7.0 | 7.0 | 73 | 41 | 7.0 | 3.8 | 6.2 | 3.8 |
| 18 | 5.8 | 8.2 | 6.0 | 6.0 | 7.0 | 7.0 | 85 | 52 | 7.0 | 3.8 | 6.2 | 3.8 |
| 19 | 6.2 | 7.6 | 6.0 | 6.0 | 7.0 | 7.0 | 62 | 43 | 7.0 | 3.8 | 6.2 | 3.8 |
| 20 | 6.2 | 7.0 | 6.0 | 6.0 | 7.0 | 7.0 | 98 | 43 | 7.0 | 4.0 | 6.2 | 3.8 |
| 21 | 6.2 | 6.8 | 6.0 | 6.0 | 7.0 | 7.0 | 85 | 35 | 7.0 | 4.0 | 6.2 | 3.5 |
| 22 | 6.2 | 6.7 | 6.0 | 6.0 | 7.0 | 6.8 | 85 | 39 | 7.0 | 4.0 | 6.2 | 3.3 |
| 23 | 6.2 | 6.5 | 6.0 | 6.0 | 7.0 | 6.6 | 57 | 39 | 7.0 | 6.0 | 6.2 | 3.0 |
| 24 | 6.2 | 6.4 | 6.0 | 6.0 | 7.0 | 6.4 | 73 | 43 | 7.0 | 24 | 5.6 | 3.0 |
| 25 | 6.2 | 6.2 | 6.0 | 6.0 | 7.0 | 6.2 | 92 | 42 | 7.0 | 22 | 5.0 | 3.0 |
| 26 | 6.2 | 6.6 | 6.0 | 6.0 | 6.0 | 8.2 | 85 | 42 | 10 | 20 | 4.8 | 3.0 |
| 27 | 6.2 | 7.0 | 6.0 | 6.0 | 5.0 | 7.8 | 105 | 42 | 16 | 16 | 4.5 | 3.0 |
| 28 | 6.2 | 7.0 | 6.0 | 6.0 | 6.2 | 7.0 | 78 | 41 | 13 | 13 | 4.3 | 3.0 |
| 29 | 6.2 | 7.0 | 6.0 | 6.0 | ..... | 8.2 | 52 | 35 | 11 | 11 | 4.0 | 3.0 |
| 30 | 6.2 | 7.0 | 6.0 | 6.0 | ..... | 12 | 45 | 29 | 9.0 | 8.2 | 3.8 | 3.0 |
| 31 | 6.2 | ..... | 6.0 | 6.0 | ..... | 16 | ..... | 26 | ..... | 7.9 | 3.8 | ..... |

NOTE.—Daily discharge determined as follows: Jan. 1 to Feb. 14, 1912, from a fairly well defined rating curve; Feb. 15–18, by indirect method for shifting channels; Feb. 19 to Mar. 9, 1912, and Dec. 1, 1912, to Feb. 25, 1913, from a rating curve fairly well defined between 4 and 40 second-feet; Mar. 10 to Nov. 30, 1912, and Feb. 13 to Sept. 30, 1913, from a fairly well defined rating curve applied to readings on new upper gage. Discharge interpolated for days when gage was not read.

*Monthly discharge of Thomas Creek near Lakeview, Oreg., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| January | 20 | 4.0 | 12.7 | 781 | C. |
| February | 35 | 6.0 | 17.6 | 1,010 | C. |
| March | 34 | 4.2 | 9.26 | 569 | C. |
| April | 73 | 26 | 38.2 | 2,270 | C. |
| May | 98 | 40 | 67.4 | 4,140 | C. |
| June | 54 | 14 | 30.5 | 1,810 | C. |
| July | 14 | 3.8 | 7.15 | 440 | B. |
| August | 7.0 | 3.0 | 4.35 | 267 | B. |
| September | 6.2 | 3.8 | 5.20 | 309 | B. |
| The period | | | | 11,600 | |
| 1912-13. | | | | | |
| October | 6.2 | 5.0 | 5.70 | 350 | B. |
| November | 13 | 6.2 | 8.44 | 502 | C. |
| December | 7.0 | 6.0 | 6.11 | 376 | C. |
| January | 6.0 | 6.0 | 6.00 | 369 | C. |
| February | 7.0 | 5.0 | 6.29 | 349 | C. |
| March | 16 | 1.2 | 7.33 | 451 | C. |
| April | 105 | 16 | 57.6 | 3,430 | C. |
| May | 68 | 26 | 43.4 | 2,670 | C. |
| June | 22 | 7.0 | 12.0 | 714 | B. |
| July | 24 | 3.8 | 8.35 | 513 | C. |
| August | 7.6 | 3.8 | 5.94 | 365 | B. |
| September | 3.8 | 3.0 | 3.56 | 212 | B. |
| The year | 105 | 3.0 | 14.2 | 10,300 | |

### FALL RIVER AT FALL RIVER, CAL.

LOCATION.—In sec. 31, T. 37 N., R. 5 E., at highway bridge at Fall River Mills, about 600 feet above junction with Pit River.

RECORDS AVAILABLE.—January 19, 1912, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to downstream end of left abutment of bridge.

CHANNEL.—Solid rock and gravel.

DISCHARGE MEASUREMENTS.—Made from bridge.

ACCURACY.—Occasionally débris collects on the riffle and causes more or less backwater, and for this reason it has been necessary to use several rating curves. Results good.

*Discharge measurements of Fall River at Fall River Mills, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 2 | Lasley Lee | 2.02 | 1,370 | Apr. 20 | G. H. Canfield | 2.03 | 1,520 |
| Mar. 9 | G. H. Canfield | 2.23 | 1,390 | Sept. 15 | Lasley Lee | 1.81 | 1,280 |

*Daily gage height, in feet, of Fall River at Fall River Mills, Cal., for the year ending Sept. 30, 1913.*

[Robert Summers, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.1 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 1.95 | 1.9 | 1.9 |
| 2 | 2.1 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 1.9 | 1.9 | 1.9 |
| 3 | 2.1 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 1.9 | 1.9 | 1.9 |
| 4 | 2.1 | 2.1 | 2.1 | 2.05 | 2.15 | 2.2 | 1.9 | 2.05 | 1.9 | 1.9 | 1.9 |
| 5 | 2.1 | 2.1 | 2.1 | 2.05 | 2.15 | 2.2 | 1.9 | 2.05 | 1.9 | 1.9 | 1.9 |
| 6 | 2.05 | 2.1 | 2.1 | 2.05 | 2.15 | 2.2 | 1.9 | 2.05 | 1.9 | 1.9 | 1.85 |
| 7 | 2.05 | 2.1 | 2.1 | 2.05 | 2.15 | 2.2 | 1.9 | 2.0 | 1.9 | 1.9 | 1.85 |
| 8 | 2.05 | 2.1 | 2.1 | 2.05 | 2.15 | 2.25 | 1.9 | 2.0 | 1.9 | 1.85 | 1.85 |
| 9 | 2.05 | 2.1 | 2.1 | 2.0 | 2.15 | 2.25 | 1.9 | 2.0 | 1.9 | 1.85 | 1.85 |
| 10 | 2.05 | 2.1 | 2.1 | 2.0 | 2.15 | 2.25 | 1.9 | 2.0 | 1.9 | 1.85 | 1.85 |
| 11 | 2.05 | 2.1 | 2.1 | 2.0 | 2.2 | 2.25 | 1.9 | 2.0 | 1.9 | 1.85 | ..... |
| 12 | 2.05 | 2.1 | 2.1 | 2.0 | 2.2 | 1.9 | 1.9 | 2.0 | 1.9 | 1.85 | ..... |
| 13 | 2.05 | 2.1 | 2.1 | 2.0 | 2.2 | 1.9 | 1.9 | 2.0 | 1.9 | 1.85 | ..... |
| 14 | 2.05 | 2.1 | 2.1 | 1.95 | 2.2 | 1.9 | 1.9 | 2.0 | 1.9 | 1.85 | ..... |
| 15 | 2.05 | 2.1 | 2.1 | 1.95 | 2.2 | 1.9 | 1.95 | 2.0 | 1.9 | 1.85 | ..... |
| 16 | 2.05 | 2.1 | 2.1 | 1.95 | 2.2 | 1.9 | 1.95 | 2.0 | 1.9 | 1.85 | ..... |
| 17 | 2.05 | 2.1 | 2.1 | 1.9 | 2.2 | 1.9 | 1.95 | 2.0 | 1.85 | 1.85 | ..... |
| 18 | 2.05 | 2.1 | 2.1 | 1.9 | 2.2 | 1.9 | 1.95 | 2.1 | 1.85 | 1.85 | ..... |
| 19 | 2.05 | 2.1 | 2.1 | 2.0 | 2.2 | 1.9 | 1.95 | 2.1 | 1.85 | 1.85 | ..... |
| 20 | 2.05 | 2.1 | 2.1 | 2.05 | 2.2 | 1.95 | 2.0 | 2.1 | 1.85 | 1.85 | ..... |
| 21 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 2.05 | 1.85 | 1.85 | ..... |
| 22 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 2.05 | 1.85 | 1.9 | ..... |
| 23 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 2.0 | 1.85 | 2.0 | ..... |
| 24 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 2.0 | 1.9 | 1.9 | ..... |
| 25 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 2.0 | 2.05 | 2.0 | 1.9 | 1.9 | ..... |
| 26 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 2.0 | 2.05 | 2.0 | 1.9 | 1.9 | ..... |
| 27 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 2.0 | 2.05 | 2.0 | 1.9 | 1.9 | ..... |
| 28 | 2.05 | 2.1 | 2.05 | 2.1 | 2.2 | 1.95 | 2.05 | 1.95 | 1.9 | 1.9 | ..... |
| 29 | 2.05 | 2.1 | 2.05 | 2.1 | ..... | 1.95 | 2.05 | 1.95 | 1.9 | 1.9 | ..... |
| 30 | 2.05 | 2.1 | 2.05 | 2.1 | ..... | 1.95 | 2.05 | 1.95 | 1.9 | 1.9 | ..... |
| 31 | 2.05 | ..... | 2.05 | 2.1 | ..... | 1.95 | ..... | ..... | ..... | 1.9 | ..... |

*Daily discharge, in second-feet, of Fall River at Fall River Mills, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | | | |
| 1 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,410 |
| 2 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,410 |
| 3 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,460 |
| 4 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,460 |
| 5 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,460 |
| 6 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,520 |
| 7 | ..... | 1,460 | 1,460 | 1,460 | 1,570 | 1,410 | 1,410 | 1,460 | 1,520 |
| 8 | ..... | 1,460 | 1,460 | 1,460 | 1,540 | 1,410 | 1,410 | 1,460 | 1,520 |
| 9 | ..... | 1,460 | 1,460 | 1,460 | 1,520 | 1,410 | 1,410 | 1,460 | 1,520 |
| 10 | ..... | 1,460 | 1,460 | 1,460 | 1,490 | 1,410 | 1,410 | 1,460 | 1,520 |
| 11 | ..... | 1,460 | 1,460 | 1,520 | 1,460 | 1,410 | 1,410 | 1,460 | 1,520 |
| 12 | ..... | 1,460 | 1,460 | 1,520 | 1,460 | 1,410 | 1,410 | 1,410 | 1,520 |
| 13 | ..... | 1,520 | 1,460 | 1,520 | 1,410 | 1,410 | 1,410 | 1,410 | 1,460 |
| 14 | ..... | 1,460 | 1,520 | 1,520 | 1,410 | 1,460 | 1,410 | 1,410 | 1,460 |
| 15 | ..... | 1,460 | 1,460 | 1,520 | 1,460 | 1,460 | 1,410 | 1,410 | 1,460 |
| 16 | ..... | 1,460 | 1,460 | 1,520 | 1,460 | 1,460 | 1,410 | 1,410 | 1,460 |
| 17 | ..... | 1,460 | 1,520 | 1,520 | 1,460 | 1,460 | 1,410 | 1,410 | 1,460 |
| 18 | ..... | 1,460 | 1,520 | 1,460 | 1,410 | 1,460 | 1,460 | 1,410 | 1,460 |
| 19 | 1,560 | 1,520 | 1,520 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 20 | 1,510 | 1,520 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 21 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 22 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 23 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 24 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 25 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 26 | 1,510 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 27 | 1,560 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 28 | 1,570 | 1,460 | 1,460 | 1,520 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 29 | 1,520 | 1,410 | 1,460 | 1,520 | 1,460 | 1,460 | 1,460 | 1,410 | 1,460 |
| 30 | 1,460 | ..... | 1,460 | 1,520 | 1,410 | 1,460 | 1,460 | 1,410 | 1,460 |
| 31 | 1,460 | ..... | 1,460 | ..... | 1,410 | ..... | 1,460 | 1,410 | ..... |

*Daily discharge, in second-feet, of Fall River at Fall River Mills, Cal., for the years ending Sept. 30, 1912–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 1,460 | 1,410 | 1,460 | 1,410 | 1,400 | 1,380 | 1,430 | 1,540 | 1,430 | 1,380 | 1,380 |
| 2 | 1,460 | 1,410 | 1,460 | 1,410 | 1,400 | 1,380 | 1,430 | 1,540 | 1,380 | 1,380 | 1,380 |
| 3 | 1,460 | 1,410 | 1,460 | 1,410 | 1,400 | 1,380 | 1,430 | 1,540 | 1,380 | 1,380 | 1,380 |
| 4 | 1,460 | 1,460 | 1,460 | 1,410 | 1,450 | 1,380 | 1,380 | 1,540 | 1,380 | 1,380 | 1,380 |
| 5 | 1,460 | 1,460 | 1,460 | 1,410 | 1,450 | 1,380 | 1,380 | 1,540 | 1,380 | 1,380 | 1,380 |
| 6 | 1,410 | 1,460 | 1,460 | 1,410 | 1,450 | 1,380 | 1,380 | 1,540 | 1,380 | 1,380 | 1,320 |
| 7 | 1,410 | 1,460 | 1,460 | 1,410 | 1,450 | 1,380 | 1,380 | 1,490 | 1,380 | 1,380 | 1,320 |
| 8 | 1,410 | 1,460 | 1,460 | 1,410 | 1,410 | 1,410 | 1,380 | 1,490 | 1,380 | 1,320 | 1,320 |
| 9 | 1,410 | 1,460 | 1,460 | 1,350 | 1,410 | 1,410 | 1,380 | 1,490 | 1,380 | 1,320 | 1,320 |
| 10 | 1,410 | 1,460 | 1,460 | 1,350 | 1,410 | 1,410 | 1,380 | 1,490 | 1,380 | 1,320 | 1,320 |
| 11 | 1,410 | 1,460 | 1,460 | 1,350 | 1,460 | 1,410 | 1,380 | 1,490 | 1,380 | 1,320 | ..... |
| 12 | 1,410 | 1,460 | 1,460 | 1,350 | 1,460 | 1,380 | 1,380 | 1,490 | 1,380 | 1,320 | ..... |
| 13 | 1,410 | 1,460 | 1,460 | 1,350 | 1,460 | 1,380 | 1,380 | 1,490 | 1,380 | 1,320 | ..... |
| 14 | 1,410 | 1,460 | 1,460 | 1,300 | 1,460 | 1,380 | 1,380 | 1,490 | 1,380 | 1,320 | ..... |
| 15 | 1,410 | 1,460 | 1,460 | 1,300 | 1,460 | 1,380 | 1,430 | 1,490 | 1,380 | 1,320 | ..... |
| 16 | 1,410 | 1,460 | 1,460 | 1,300 | 1,460 | 1,380 | 1,430 | 1,490 | 1,380 | 1,320 | ..... |
| 17 | 1,410 | 1,460 | 1,460 | 1,240 | 1,460 | 1,380 | 1,430 | 1,490 | 1,320 | 1,320 | ..... |
| 18 | 1,410 | 1,460 | 1,460 | 1,240 | 1,420 | 1,380 | 1,430 | 1,590 | 1,320 | 1,320 | ..... |
| 19 | 1,410 | 1,460 | 1,460 | 1,330 | 1,420 | 1,380 | 1,430 | 1,590 | 1,320 | 1,320 | ..... |
| 20 | 1,410 | 1,460 | 1,460 | 1,390 | 1,420 | 1,430 | 1,490 | 1,590 | 1,320 | 1,320 | ..... |
| 21 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,430 | 1,540 | 1,540 | 1,320 | 1,320 | ..... |
| 22 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,430 | 1,540 | 1,540 | 1,320 | 1,350 | ..... |
| 23 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,430 | 1,540 | 1,490 | 1,320 | 1,490 | ..... |
| 24 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,430 | 1,540 | 1,490 | 1,380 | 1,380 | ..... |
| 25 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,490 | 1,540 | 1,490 | 1,380 | 1,380 | ..... |
| 26 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,490 | 1,540 | 1,490 | 1,380 | 1,380 | ..... |
| 27 | 1,410 | 1,460 | 1,410 | 1,440 | 1,420 | 1,490 | 1,540 | 1,490 | 1,380 | 1,380 | ..... |
| 28 | 1,410 | 1,460 | 1,410 | 1,440 | 1,380 | 1,430 | 1,540 | 1,430 | 1,380 | 1,380 | ..... |
| 29 | 1,410 | 1,460 | 1,410 | 1,400 | ..... | 1,430 | 1,540 | 1,430 | 1,380 | 1,380 | ..... |
| 30 | 1,410 | 1,460 | 1,410 | 1,400 | ..... | 1,430 | 1,540 | 1,430 | 1,380 | 1,380 | ..... |
| 31 | 1,410 | ..... | 1,410 | 1,400 | ..... | 1,430 | ..... | 1,430 | ..... | 1,380 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Jan. 19–27, 1912, poorly defined; Jan. 28, 1912, to Jan. 18, 1913, fairly well defined; Jan. 19 to Mar. 11, 1913, discharge estimated by indirect method for shifting channels; Mar. 12 to Sept. 30, 1913, fairly well defined. Discharge interpolated May 8–10, 1912.

*Monthly discharge of Fall River at Fall River Mills, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| January 19–31 | 1,570 | 1,460 | 1,520 | 39,200 | C. |
| February | 1,520 | 1,410 | 1,460 | 84,000 | B. |
| March | 1,520 | 1,460 | 1,470 | 90,400 | B. |
| April | 1,520 | 1,460 | 1,480 | 88,100 | B. |
| May | 1,570 | 1,410 | 1,480 | 91,000 | B. |
| June | 1,460 | 1,410 | 1,440 | 85,700 | B. |
| July | 1,460 | 1,410 | 1,430 | 87,900 | B. |
| August | 1,460 | 1,410 | 1,430 | 87,900 | B. |
| September | 1,520 | 1,410 | 1,470 | 87,500 | B. |
| The period | ..... | ..... | ..... | 742,000 | |
| 1912–13. | | | | | |
| October | 1,460 | 1,410 | 1,420 | 87,300 | B. |
| November | 1,460 | 1,410 | 1,460 | 86,900 | B. |
| December | 1,460 | 1,410 | 1,440 | 88,500 | B. |
| January | 1,440 | 1,240 | 1,380 | 84,800 | C. |
| February | 1,460 | 1,380 | 1,430 | 79,400 | C. |
| March | 1,490 | 1,380 | 1,410 | 86,700 | C. |
| April | 1,540 | 1,380 | 1,450 | 86,300 | B. |
| May | 1,590 | 1,430 | 1,500 | 92,200 | B. |
| June | 1,430 | 1,320 | 1,370 | 81,500 | B. |
| July | 1,490 | 1,320 | 1,360 | 83,600 | B. |
| August | ..... | ..... | [a] 1,330 | 81,800 | C. |
| September | ..... | ..... | [a] 1,280 | 76,200 | C. |
| The year | ..... | ..... | 1,400 | 1,020,000 | |

[a] Estimated on basis of measurement Sept. 15, 1913.

### HAT CREEK AT HAWKINS RANCH, NEAR HAT CREEK, CAL.

LOCATION.—In sec. 5, T. 33 N., R. 5 E., at Hawkins ranch, 6 miles south of Hat Creek.

RECORDS AVAILABLE.—August 15, 1911, to August 9, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream end of right support of footbridge.

CHANNEL.—Sand and gravel; fairly smooth and permanent.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

DIVERSIONS.—The only important diversion for irrigation above this station is the H. M. Wilcox ditch, which heads about one-half mile above the gage. About 40 second-feet is diverted by this canal at irregular intervals, as shown by the observer's notes. Near the source of the creek water is diverted into Bear Creek drainage for use in development of power.

ACCURACY.—Range of stage small; rating curve fairly well defined. Results good.

*Discharge measurements of Hat Creek, at Hawkins ranch, near Hat Creek, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 10 | C. H. Canfield | 2.36 | 140 | Sept. 14 | Lasley Lee | 2.14 | 94 |
| Apr. 21 | do | 2.37 | 142 | | | | |

*Daily gage height, in feet, of Hat Creek, at Hawkins ranch, near Hat Creek, Cal., for year ending Sept. 30, 1913.*

[Charles Hawkins, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.68 | 2.65 | 2.50 | 2.45 | 2.35 | 2.33 | 2.32 | 2.45 | 2.70 | 2.35 | 2.3 |
| 2 | 2.70 | 2.68 | 2.48 | 2.42 | 2.35 | 2.30 | 2.35 | 2.45 | 2.70 | 2.35 | 2.32 |
| 3 | 2.70 | 2.68 | 2.45 | 2.45 | 2.35 | 2.33 | 2.35 | 2.45 | 2.75 | 2.32 | 2.32 |
| 4 | 2.68 | 2.68 | 2.45 | 2.42 | 2.32 | 2.30 | 2.38 | 2.48 | 2.80 | 2.32 | 2.32 |
| 5 | 2.68 | 2.68 | 2.42 | 2.42 | 2.32 | 2.30 | 2.38 | 2.50 | 2.75 | 2.35 | 2.35 |
| 6 | 2.68 | 2.70 | 2.42 | 2.45 | 2.35 | 2.33 | 2.40 | 2.50 | 2.70 | 2.35 | 2.35 |
| 7 | 2.68 | 2.80 | 2.42 | 2.45 | 2.32 | 2.33 | 2.38 | 2.52 | 2.65 | 2.32 | 2.35 |
| 8 | 2.88 | 2.80 | 2.45 | 2.45 | 2.32 | 2.32 | 2.38 | 2.60 | 2.70 | 2.32 | 2.35 |
| 9 | 2.65 | 2.75 | 2.45 | 2.42 | 2.32 | 2.32 | 2.35 | 2.70 | 2.70 | 2.30 | 2.22 |
| 10 | 2.65 | 2.70 | 2.45 | 2.42 | 2.35 | 2.32 | 2.35 | 2.68 | 2.68 | 2.28 | ..... |
| 11 | 2.65 | 2.70 | 2.45 | 2.42 | 2.35 | 2.32 | 2.35 | 2.60 | 2.65 | 2.28 | ..... |
| 12 | 2.60 | 2.68 | 2.45 | 2.40 | 2.35 | 2.35 | 2.38 | 2.52 | 2.65 | 2.28 | ..... |
| 13 | 2.62 | 2.68 | 2.45 | 2.40 | 2.32 | 2.32 | 2.35 | 2.52 | 2.65 | 2.25 | ..... |
| 14 | 2.62 | 2.70 | 2.42 | 2.40 | 2.32 | 2.32 | 2.35 | 2.55 | 2.60 | 2.25 | ..... |
| 15 | 2.65 | 2.68 | 2.45 | 2.38 | 2.32 | 2.33 | 2.35 | 2.55 | 2.55 | 2.25 | ..... |
| 16 | 2.63 | 2.68 | 2.42 | 2.38 | 2.32 | 2.32 | 2.35 | 2.55 | 2.50 | 2.25 | ..... |
| 17 | 2.65 | 2.68 | 2.40 | 2.38 | 2.32 | 2.32 | 2.35 | 2.52 | 2.35 | 2.28 | ..... |
| 18 | 2.65 | 2.65 | 2.40 | 2.38 | 2.32 | 2.30 | 2.38 | 2.50 | 2.35 | 2.28 | ..... |
| 19 | 2.65 | 2.65 | 2.40 | 2.38 | 2.30 | 2.30 | 2.38 | 2.50 | 2.38 | 2.25 | ..... |
| 20 | 2.62 | 2.68 | 2.40 | 2.38 | 2.30 | 2.32 | 2.38 | 2.52 | 2.40 | 2.25 | ..... |
| 21 | 2.62 | 2.65 | 2.40 | 2.38 | 2.30 | 2.38 | 2.38 | 2.52 | 2.40 | 2.25 | ..... |
| 22 | 2.60 | 2.62 | 2.40 | 2.35 | 2.32 | 2.40 | 2.38 | 2.52 | 2.40 | 2.28 | ..... |
| 23 | 2.62 | 2.62 | 2.42 | 2.35 | 2.32 | 2.45 | 2.38 | 2.55 | 2.38 | 2.25 | ..... |
| 24 | 2.62 | 2.60 | 2.42 | 2.35 | 2.32 | 2.48 | 2.40 | 2.55 | 2.35 | 2.22 | ..... |
| 25 | 2.65 | 2.60 | 2.42 | 2.32 | 2.32 | 2.45 | 2.45 | 2.55 | 2.32 | 2.25 | ..... |
| 26 | 2.65 | 2.60 | 2.45 | 2.32 | 2.33 | 2.40 | 2.48 | 2.58 | 2.35 | 2.25 | ..... |
| 27 | 2.65 | 2.58 | 2.45 | 2.32 | 2.33 | 2.35 | 2.48 | 2.58 | 2.35 | 2.28 | ..... |
| 28 | 2.65 | 2.58 | 2.45 | 2.32 | 2.33 | 2.32 | 2.45 | 2.60 | 2.32 | 2.28 | ..... |
| 29 | 2.65 | 2.55 | 2.45 | 2.35 | ..... | 2.30 | 2.48 | 2.65 | 2.35 | 2.3 | ..... |
| 30 | 2.65 | 2.55 | 2.45 | 2.35 | ..... | 2.35 | 2.48 | 2.65 | 2.35 | 2.3 | ..... |
| 31 | 2.65 | ..... | 2.45 | 2.32 | ..... | 2.35 | ..... | 2.65 | ..... | 2.3 | ..... |

*Daily discharge, in second-feet, of Hat Creek, at Hawkins ranch, near Hat Creek, Cal., for the year ending Sept. 30, 1911–13.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | ..... | 191 | 11 | ..... | 195 | 21 | 174 | 153 |
| 2 | ..... | 191 | 12 | ..... | 170 | 22 | 170 | 153 |
| 3 | ..... | 191 | 13 | ..... | 174 | 23 | 138 | 191 |
| 4 | ..... | 191 | 14 | ..... | 170 | 24 | 138 | 202 |
| 5 | ..... | 187 | 15 | 138 | 170 | 25 | 138 | 202 |
| 6 | ..... | 191 | 16 | 138 | 153 | 26 | 134 | 213 |
| 7 | ..... | 195 | 17 | 170 | 153 | 27 | 128 | 213 |
| 8 | ..... | 202 | 18 | 170 | 153 | 28 | 128 | 202 |
| 9 | ..... | 191 | 17 | 174 | 170 | 29 | 128 | 191 |
| 10 | ..... | 191 | 20 | 174 | 170 | 30 | 138 | 191 |
| | | | | | | 31 | 170 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 180 | 213 | 213 | 195 | 187 | 180 | 174 | 180 | 198 | 170 | 170 | 191 |
| 2 | 174 | 213 | 213 | 195 | 187 | 180 | 174 | 180 | 180 | 170 | 174 | 191 |
| 3 | 187 | 213 | 213 | 195 | 187 | 180 | 174 | 180 | 180 | 170 | 174 | 187 |
| 4 | 213 | 213 | 213 | 195 | 191 | 180 | 174 | 180 | 187 | 180 | 170 | 187 |
| 5 | 213 | 213 | 213 | 195 | 191 | 180 | 174 | 153 | 187 | 187 | 170 | 191 |
| 6 | 217 | 213 | 213 | 195 | 191 | 180 | 174 | 160 | 187 | 187 | 170 | 257 |
| 7 | 224 | 213 | 202 | 195 | 187 | 180 | 174 | 160 | 180 | 191 | 170 | 257 |
| 8 | 213 | 213 | 202 | 195 | 187 | 180 | 174 | 170 | 180 | 191 | 170 | 235 |
| 9 | 213 | 213 | 202 | 195 | 187 | 174 | 180 | 180 | 180 | 187 | 166 | 202 |
| 10 | 202 | 213 | 202 | 195 | 187 | 174 | 180 | 180 | 187 | 170 | 166 | 202 |
| 11 | 202 | 213 | 202 | 195 | 191 | 174 | 180 | 180 | 187 | 170 | 160 | 202 |
| 12 | 202 | 213 | 202 | 195 | 191 | 174 | 180 | 191 | 191 | 170 | 160 | 191 |
| 13 | 202 | 213 | 195 | 195 | 191 | 180 | 174 | 191 | 191 | 170 | 160 | 191 |
| 14 | 209 | 213 | 195 | 195 | 191 | 180 | 174 | 187 | 191 | 170 | 160 | 191 |
| 15 | 209 | 213 | 191 | 195 | 180 | 180 | 180 | 187 | 191 | 170 | 153 | 191 |
| 16 | 202 | 213 | 191 | 195 | 180 | 180 | 180 | 187 | 191 | 170 | 153 | 195 |
| 17 | 202 | 213 | 191 | 191 | 180 | 180 | 180 | 187 | 195 | 170 | 153 | 195 |
| 18 | 202 | 213 | 191 | 191 | 180 | 180 | 180 | 180 | 195 | 170 | 153 | 195 |
| 19 | 209 | 213 | 191 | 191 | 180 | 174 | 180 | 180 | 209 | 174 | 170 | 202 |
| 20 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 180 | 213 | 174 | 170 | 202 |
| 21 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 187 | 224 | 174 | 170 | 209 |
| 22 | 213 | 213 | 191 | 191 | 180 | 187 | 180 | 187 | 235 | 170 | 170 | 209 |
| 23 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 180 | 235 | 170 | 174 | 209 |
| 24 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 180 | 246 | 166 | 174 | 213 |
| 25 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 187 | 257 | 166 | 180 | 213 |
| 26 | 213 | 213 | 191 | 191 | 180 | 174 | 180 | 187 | 224 | 170 | 187 | 213 |
| 27 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 187 | 180 | 170 | 187 | 213 |
| 28 | 213 | 213 | 191 | 191 | 180 | 180 | 180 | 191 | 180 | 174 | 180 | 213 |
| 29 | 213 | 213 | 191 | 191 | 180 | 174 | 180 | 195 | 170 | 174 | 187 | 209 |
| 30 | 213 | 213 | 195 | 191 | ..... | 174 | 180 | 213 | 170 | 170 | 187 | 209 |
| 31 | 213 | ..... | 195 | 191 | ..... | 174 | ..... | 217 | ..... | 170 | 191 | ..... |

*Daily discharge, in second-feet, of Hat Creek at Hawkins ranch, near Hat Creek, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 209 | 202 | 170 | 160 | 138 | 134 | 132 | 160 | 213 | 138 | 128 |
| 2 | 213 | 209 | 166 | 153 | 138 | 128 | 138 | 160 | 213 | 138 | 132 |
| 3 | 213 | 209 | 160 | 160 | 138 | 134 | 138 | 160 | 224 | 132 | 132 |
| 4 | 209 | 209 | 160 | 153 | 132 | 128 | 145 | 166 | 235 | 132 | 132 |
| 5 | 209 | 209 | 153 | 153 | 132 | 128 | 145 | 170 | 224 | 138 | 138 |
| 6 | 209 | 213 | 153 | 160 | 138 | 134 | 149 | 170 | 213 | 138 | 138 |
| 7 | 209 | 235 | 153 | 160 | 132 | 134 | 145 | 174 | 202 | 132 | 138 |
| 8 | 209 | 235 | 160 | 160 | 132 | 132 | 145 | 191 | 213 | 132 | 138 |
| 9 | 202 | 224 | 160 | 153 | 132 | 132 | 138 | 213 | 213 | 128 | 111 |
| 10 | 202 | 213 | 160 | 153 | 138 | 132 | 138 | 209 | 209 | 124 | ..... |
| 11 | 202 | 213 | 160 | 153 | 138 | 132 | 138 | 191 | 202 | 124 | ..... |
| 12 | 191 | 209 | 160 | 149 | 138 | 138 | 145 | 174 | 202 | 124 | ..... |
| 13 | 195 | 209 | 160 | 149 | 132 | 132 | 138 | 174 | 202 | 118 | ..... |
| 14 | 195 | 213 | 153 | 149 | 132 | 132 | 138 | 180 | 191 | 118 | ..... |
| 15 | 202 | 209 | 160 | 145 | 132 | 134 | 138 | 180 | 180 | 118 | ..... |
| 16 | 198 | 209 | 153 | 145 | 132 | 132 | 138 | 180 | 170 | 118 | ..... |
| 17 | 202 | 209 | 149 | 145 | 132 | 132 | 138 | 174 | 138 | 124 | ..... |
| 18 | 202 | 202 | 149 | 145 | 132 | 128 | 145 | 170 | 138 | 124 | ..... |
| 19 | 202 | 202 | 149 | 145 | 128 | 128 | 145 | 170 | 145 | 118 | ..... |
| 20 | 195 | 209 | 149 | 145 | 128 | 132 | 145 | 174 | 149 | 118 | ..... |
| 21 | 195 | 202 | 149 | 145 | 128 | 145 | 145 | 174 | 149 | 118 | ..... |
| 22 | 191 | 195 | 149 | 138 | 132 | 149 | 145 | 174 | 149 | 124 | ..... |
| 23 | 195 | 195 | 153 | 138 | 132 | 160 | 145 | 180 | 145 | 118 | ..... |
| 24 | 195 | 191 | 153 | 138 | 132 | 166 | 149 | 180 | 138 | 111 | ..... |
| 25 | 202 | 191 | 153 | 132 | 132 | 160 | 160 | 180 | 132 | 118 | ..... |
| 26 | 202 | 191 | 160 | 132 | 134 | 149 | 166 | 187 | 138 | 118 | ..... |
| 27 | 202 | 187 | 160 | 132 | 134 | 138 | 166 | 187 | 138 | 124 | ..... |
| 28 | 202 | 187 | 160 | 132 | 134 | 132 | 160 | 191 | 132 | 124 | ..... |
| 29 | 202 | 180 | 160 | 138 | ..... | 128 | 166 | 202 | 138 | 128 | ..... |
| 30 | 202 | 180 | 160 | 138 | ..... | 138 | 166 | 202 | 138 | 128 | ..... |
| 31 | 202 | ..... | 160 | 132 | ..... | 138 | ..... | 202 | ..... | 128 | ..... |

NOTE.—Daily discharge determined from a rating curve fairly well defined below 170 second-feet.

*Monthly discharge of Hat Creek at Hawkins ranch, near Hat Creek, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August 15–31 | 174 | 128 | 150 | 5,060 | B. |
| September | 213 | 153 | 184 | 10,900 | B. |
| 1911–12. | | | | | |
| October | 224 | 174 | 207 | 12,700 | B. |
| November | 213 | 213 | 213 | 12,700 | B. |
| December | 213 | 191 | 198 | 12,200 | B. |
| January | 195 | 191 | 193 | 11,900 | B. |
| February | 191 | 180 | 184 | 10,600 | B. |
| March | 180 | 174 | 178 | 10,900 | B. |
| April | 180 | 174 | 178 | 10,600 | B. |
| May | 217 | 153 | 183 | 11,300 | B. |
| June | 257 | 170 | 197 | 11,700 | B. |
| July | 191 | 166 | 174 | 10,700 | B. |
| August | 191 | 153 | 170 | 10,500 | B. |
| September | 257 | 187 | 206 | 12,300 | B. |
| The year | 257 | 153 | 190 | 138,000 | |
| 1912–13. | | | | | |
| October | 213 | 191 | 202 | 12,400 | B. |
| November | 235 | 180 | 205 | 12,200 | B. |
| December | 170 | 149 | 157 | 9,650 | B. |
| January | 160 | 132 | 146 | 8,980 | A. |
| February | 138 | 128 | 133 | 7,390 | A. |
| March | 166 | 128 | 137 | 8,420 | A. |
| April | 166 | 132 | 146 | 8,690 | A. |
| May | 213 | 160 | 181 | 11,100 | B. |
| June | 235 | 132 | 176 | 10,500 | B. |
| July | 138 | 111 | 125 | 7,690 | A. |
| August 1–9 | 138 | 111 | 132 | 2,360 | A. |
| The period | ..... | ..... | ..... | 99,400 | |

### HAT CREEK AT HAT CREEK, CAL.

LOCATION.—In the SE. ¼ sec. 10, T. 34 N., R. 4 E., in Lassen National Forest, at private highway bridge on Morris ranch, a mile north of Hat Creek post office.

RECORDS AVAILABLE.—September 22, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to downstream end of right abutment of bridge.

CHANNEL.—Gravel and small bowlders; rough; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

DIVERSIONS.—On May 13, 1911, nine ditches above the station were diverting a total of 110 of water for irrigation. Of this quantity it was estimated that 55 second-feet was returned to the stream above the gage.

ACCURACY.—Rating curves fairly well defined; results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Hat Creek at Hat Creek, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 11 | G. H. Canfield | 2.41 | 132 | Sept. 13 | Lasley Lee | 1.90 | 42 |
| 11 | do | 2.41 | 136 | 14 | do | 1.90 | 44 |
| Apr. 22 | do | [a] 2.39 | 140 | | | | |

[a] Débris removed from control. Gage height before removing rocks and moss, 2.45 feet.

*Daily gage height, in feet, of Hat Creek at Hat Creek, Cal., for the year ending Sept. 30, 1913.*

[Fred Seaborn, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2.42 | | 2.42 | | | | | | 2.38 | | |
| 2 | 2.35 | | 2.45 | | | | | | | | | |
| 3 | | | 2.42 | | | 2.40 | | | 2.39 | | 2.15 | |
| 4 | | 2.43 | | | | | | 2.34 | | | | |
| 5 | 2.36 | 2.46 | | 2.38 | | | | | | | | |
| 6 | | | 2.41 | | 2.40 | | | 2.30 | | | 2.20 | |
| 7 | | 2.56 | | | | | | 2.26 | 2.35 | | | |
| 8 | 2.40 | | | | | 2.40 | | | | | | |
| 9 | | 2.60 | 2.41 | | 2.40 | 2.39 | | | | | | 1.82 |
| 10 | 2.41 | 2.54 | | | 2.40 | | 2.40 | | | | | |
| 11 | 2.45 | 2.48 | | 2.43 | | 2.41 | | | 2.30 | | | 1.73 |
| 12 | | | | | 2.39 | 2.38 | 2.44 | | | | | |
| 13 | | | | | | 2.39 | | 2.24 | | 2.05 | | 1.90 |
| 14 | 2.43 | 2.49 | 2.44 | 2.45 | 2.40 | 2.39 | | | | | | 1.90 |
| 15 | | 2.48 | | | 2.40 | | | | | | | |
| 16 | | | 2.43 | | | | 2.41 | | | 1.95 | | |
| 17 | | 2.48 | | | | | | 2.11 | | 1.90 | | |
| 18 | | | | | | | | | | | | |
| 19 | 2.42 | | | | | | | | 2.05 | 1.83 | | 1.80 |
| 20 | | 2.47 | | 2.40 | | 2.37 | | | | | | |
| 21 | 2.40 | | | | | | 2.45 | | | | | |
| 22 | | 2.45 | | | | | 2.39 | | 2.08 | 1.85 | | 1.93 |
| 23 | | 2.47 | | | | 2.38 | | | | | | |
| 24 | 2.43 | | | | | | | | 2.20 | | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | 2.40 | | 2.35 | | | | | | |
| 27 | | | | 2.40 | | 2.40 | | | 2.41 | | | |
| 28 | | 2.46 | | 2.41 | 2.38 | 2.37 | | | | | 2.08 | |
| 29 | | | | | | | | | 2.35 | 2.20 | 2.06 | |
| 30 | 2.40 | | | 2.40 | | 2.39 | 2.34 | 2.30 | | | | |
| 31 | 2.40 | | | | | | | 2.35 | | | | |

*Daily discharge, in second-feet, of Hat Creek at Hat Creek, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 129 | 142 | 140 | 133 | 129 | 126 | 127 | 124 | 129 | 133 | 89 | 59 |
| 2 | 128 | 143 | 140 | 131 | 129 | 127 | 127 | 124 | 132 | 128 | 87 | 56 |
| 3 | 128 | 144 | 133 | 129 | 129 | 129 | 128 | 124 | 135 | 122 | 86 | 53 |
| 4 | 129 | 145 | 132 | 127 | 129 | 129 | 128 | 124 | 132 | 117 | 89 | 50 |
| 5 | 130 | 151 | 132 | 125 | 129 | 129 | 128 | 119 | 130 | 111 | 92 | 47 |
| 6 | 132 | 162 | 131 | 126 | 129 | 129 | 128 | 115 | 128 | 106 | 95 | 44 |
| 7 | 135 | 174 | 131 | 128 | 129 | 129 | 129 | 107 | 126 | 100 | 94 | 41 |
| 8 | 138 | 179 | 131 | 130 | 129 | 129 | 129 | 106 | 123 | 95 | 93 | 38 |
| 9 | 139 | 184 | 131 | 132 | 129 | 127 | 129 | 105 | 120 | 89 | 92 | 35 |
| 10 | 140 | 160 | 132 | 134 | 129 | 129 | 129 | 105 | 117 | 84 | 91 | 30 |
| 11 | 149 | 147 | 133 | 136 | 128 | 131 | 133 | 104 | 115 | 78 | 90 | 24 |
| 12 | 147 | 147 | 134 | 137 | 127 | 125 | 138 | 103 | 109 | 73 | 89 | 34 |
| 13 | 146 | 148 | 136 | 138 | 128 | 127 | 136 | 103 | 103 | 68 | 88 | 45 |
| 14 | 145 | 149 | 138 | 140 | 129 | 127 | 134 | 97 | 97 | 62 | 87 | 45 |
| 15 | 144 | 147 | 137 | 138 | 129 | 126 | 132 | 91 | 91 | 57 | 86 | 42 |
| 16 | 143 | 147 | 136 | 136 | 129 | 125 | 131 | 85 | 85 | 52 | 86 | 39 |
| 17 | 143 | 147 | 136 | 134 | 128 | 124 | 132 | 79 | 79 | 45 | 85 | 36 |
| 18 | 142 | 146 | 136 | 132 | 128 | 123 | 134 | 81 | 73 | 40 | 84 | 34 |
| 19 | 142 | 145 | 136 | 130 | 128 | 122 | 136 | 83 | 68 | 36 | 83 | 32 |
| 20 | 140 | 144 | 135 | 129 | 127 | 122 | 138 | 85 | 70 | 36 | 82 | 38 |
| 21 | 138 | 142 | 135 | 129 | 127 | 123 | 140 | 88 | 72 | 37 | 81 | 44 |
| 22 | 140 | 140 | 135 | 129 | 127 | 124 | 135 | 91 | 74 | 38 | 80 | 50 |
| 23 | 142 | 144 | 135 | 129 | 126 | 125 | 133 | 94 | 84 | 46 | 79 | 58 |
| 24 | 145 | 144 | 134 | 129 | 126 | 122 | 131 | 97 | 95 | 54 | 78 | 68 |
| 25 | 143 | 143 | 134 | 129 | 126 | 120 | 129 | 100 | 109 | 62 | 77 | 78 |
| 26 | 142 | 143 | 134 | 129 | 125 | 118 | 128 | 103 | 124 | 70 | 76 | 88 |
| 27 | 141 | 142 | 134 | 129 | 125 | 129 | 127 | 106 | 139 | 78 | 75 | 98 |
| 28 | 140 | 142 | 133 | 131 | 125 | 122 | 126 | 109 | 132 | 86 | 74 | 108 |
| 29 | 139 | 141 | 133 | 130 | ..... | 124 | 125 | 112 | 126 | 95 | 70 | 118 |
| 30 | 138 | 141 | 133 | 129 | ..... | 127 | 124 | 115 | 129 | 93 | 66 | 128 |
| 31 | 138 | ..... | 133 | 129 | ..... | 127 | ..... | 126 | ..... | 91 | 62 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge interpolated for days when gage was not read.

*Monthly discharge of Hat Creek at Hat Creek, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 149 | 128 | 139 | 8,550 | B. |
| November | 184 | 140 | 149 | 8,870 | B. |
| December | 140 | 131 | 134 | 8,240 | B. |
| January | 140 | 125 | 131 | 8,060 | B. |
| February | 129 | 125 | 128 | 7,110 | B. |
| March | 131 | 118 | 126 | 7,750 | B. |
| April | 140 | 124 | 131 | 7,800 | B. |
| May | 126 | 79 | 103 | 6,330 | C. |
| June | 139 | 68 | 108 | 6,430 | B. |
| July | 133 | 36 | 76.8 | 4,720 | B. |
| August | 95 | 62 | 83.4 | 5,130 | B. |
| September | 128 | 24 | 55.3 | 3,290 | C. |
| The year | 184 | 24 | 114 | 82,300 | |

### RISING RIVER NEAR CASSEL, CAL.

LOCATION.—In sec. 8, T. 35 N., R. 4 E., at highway bridge about half a mile above junction with Hat Creek, and 1¼ miles south of Cassel.

RECORDS AVAILABLE.—August 15, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream side of bridge pier near left bank.

CHANNEL.—Sand and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Results excellent. This stream, which is only about 2 miles long, is fed by springs and its flow is very constant.

*Discharge measurements of Rising River near Cassel, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| Mar. 8 | G. H. Canfield | 1.22 | 312 |
| Sept. 15 | Lasley Lee | 1.28 | 335 |

*Daily gage height, in feet, of Rising River near Cassel, Cal., for the year ending Sept. 30, 1913.*

[De Forest Hobson, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 1.55 | 1.45 | 1.35 | 1.3 | 1.25 | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 |
| 2 | 1.5 | 1.55 | 1.45 | 1.35 | 1.3 | 1.2 | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 |
| 3 | 1.5 | 1.55 | 1.45 | 1.35 | 1.3 | 1.2 | 1.2 | 1.15 | 1.25 | 1.4 | 1.3 |
| 4 | 1.55 | 1.55 | 1.45 | 1.35 | 1.3 | 1.2 | 1.2 | 1.15 | 1.25 | 1.4 | 1.3 |
| 5 | 1.55 | 1.55 | 1.45 | 1.35 | 1.3 | 1.2 | 1.2 | 1.15 | 1.25 | 1.35 | 1.3 |
| 6 | 1.55 | 1.6 | 1.4 | 1.35 | 1.3 | 1.2 | 1.2 | 1.15 | 1.3 | 1.35 | 1.3 |
| 7 | 1.55 | 1.6 | 1.4 | 1.3 | 1.3 | 1.2 | 1.2 | 1.15 | 1.3 | 1.35 | 1.3 |
| 8 | 1.55 | 1.6 | 1.4 | 1.3 | 1.3 | 1.2 | 1.2 | 1.15 | 1.3 | 1.35 | 1.3 |
| 9 | 1.55 | 1.6 | 1.4 | 1.3 | 1.3 | 1.2 | 1.2 | 1.15 | 1.3 | 1.35 | 1.3 |
| 10 | 1.55 | 1.6 | 1.4 | 1.3 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.35 | 1.3 |
| 11 | 1.55 | 1.6 | 1.4 | 1.3 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.3 | ..... |
| 12 | 1.55 | 1.55 | 1.4 | 1.3 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.3 | ..... |
| 13 | 1.55 | 1.55 | 1.45 | 1.3 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.3 | ..... |
| 14 | 1.55 | 1.55 | 1.45 | 1.35 | 1.25 | 1.2 | 1.2 | 1.1 | 1.3 | 1.3 | ..... |
| 15 | 1.55 | 1.55 | 1.4 | 1.35 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.3 | ..... |
| 16 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.2 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 17 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.2 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 18 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.2 | 1.2 | 1.15 | 1.3 | 1.3 | ..... |
| 19 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.2 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 20 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.2 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 21 | 1.6 | 1.5 | 1.4 | 1.35 | 1.25 | 1.25 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 22 | 1.6 | 1.5 | 1.4 | 1.3 | 1.25 | 1.2 | 1.15 | 1.15 | 1.3 | 1.3 | ..... |
| 23 | 1.6 | 1.5 | 1.4 | 1.3 | 1.25 | 1.2 | 1.15 | 1.15 | 1.35 | 1.3 | ..... |
| 24 | 1.6 | 1.5 | 1.4 | 1.3 | 1.25 | 1.2 | 1.15 | 1.15 | 1.35 | 1.3 | ..... |
| 25 | 1.6 | 1.5 | 1.4 | 1.3 | 1.25 | 1.2 | 1.15 | 1.15 | 1.35 | 1.3 | ..... |
| 26 | 1.6 | 1.5 | 1.4 | 1.3 | 1.25 | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 | ..... |
| 27 | 1.6 | 1.5 | 1.35 | 1.3 | 1.25 | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 | ..... |
| 28 | 1.6 | 1.45 | 1.35 | 1.3 | 1.25 | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 | ..... |
| 29 | 1.6 | 1.45 | 1.35 | 1.3 | ..... | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 | ..... |
| 30 | 1.55 | 1.45 | 1.35 | 1.3 | ..... | 1.2 | 1.15 | 1.2 | 1.4 | 1.3 | ..... |
| 31 | 1.55 | ..... | 1.35 | 1.3 | ..... | 1.2 | ..... | 1.2 | ..... | 1.3 | ..... |

*Daily discharge, in second-feet, of Rising River near Cassel, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 420 | 440 | 400 | 360 | 340 | 320 | 305 | 290 | 305 | 380 | 340 |
| 2 | 420 | 440 | 400 | 360 | 340 | 305 | 305 | 290 | 305 | 380 | 340 |
| 3 | 420 | 440 | 400 | 360 | 340 | 305 | 305 | 290 | 320 | 380 | 340 |
| 4 | 440 | 440 | 400 | 360 | 340 | 305 | 305 | 290 | 320 | 380 | 340 |
| 5 | 440 | 440 | 400 | 360 | 340 | 305 | 305 | 290 | 320 | 360 | 340 |
| 6 | 440 | 460 | 380 | 360 | 340 | 305 | 305 | 290 | 340 | 360 | 340 |
| 7 | 440 | 460 | 380 | 340 | 340 | 305 | 305 | 290 | 340 | 360 | 340 |
| 8 | 440 | 460 | 380 | 340 | 340 | 305 | 305 | 290 | 340 | 360 | 340 |
| 9 | 440 | 460 | 380 | 340 | 340 | 305 | 305 | 290 | 340 | 360 | 340 |
| 10 | 440 | 460 | 380 | 340 | 320 | 305 | 305 | 290 | 340 | 360 | 340 |
| 11 | 440 | 460 | 380 | 340 | 320 | 305 | 305 | 290 | 340 | 340 | ..... |
| 12 | 440 | 440 | 380 | 340 | 320 | 305 | 305 | 290 | 340 | 340 | ..... |
| 13 | 440 | 440 | 400 | 340 | 320 | 305 | 305 | 290 | 340 | 340 | ..... |
| 14 | 440 | 440 | 400 | 360 | 320 | 305 | 305 | 275 | 340 | 340 | ..... |
| 15 | 440 | 440 | 380 | 360 | 320 | 305 | 305 | 290 | 340 | 340 | ..... |
| 16 | 460 | 420 | 380 | 360 | 320 | 305 | 290 | 290 | 340 | 340 | ..... |
| 17 | 460 | 420 | 380 | 360 | 320 | 305 | 290 | 290 | 340 | 340 | ..... |
| 18 | 460 | 420 | 380 | 360 | 320 | 305 | 305 | 290 | 340 | 340 | ..... |
| 19 | 460 | 420 | 380 | 360 | 320 | 305 | 290 | 290 | 340 | 340 | ..... |
| 20 | 460 | 420 | 380 | 360 | 320 | 305 | 290 | 290 | 340 | 340 | ..... |
| 21 | 460 | 420 | 380 | 360 | 320 | 320 | 290 | 290 | 304 | 340 | ..... |
| 22 | 460 | 420 | 380 | 340 | 320 | 305 | 290 | 290 | 340 | 340 | ..... |
| 23 | 460 | 420 | 380 | 340 | 320 | 305 | 290 | 290 | 360 | 340 | ..... |
| 24 | 460 | 420 | 380 | 340 | 320 | 305 | 290 | 290 | 360 | 340 | ..... |
| 25 | 460 | 420 | 380 | 340 | 320 | 305 | 290 | 290 | 360 | 340 | ..... |
| 26 | 460 | 420 | 380 | 340 | 320 | 305 | 290 | 305 | 380 | 340 | ..... |
| 27 | 460 | 420 | 360 | 340 | 320 | 305 | 290 | 305 | 380 | 340 | ..... |
| 28 | 460 | 400 | 360 | 340 | 320 | 305 | 290 | 305 | 380 | 340 | ..... |
| 29 | 460 | 400 | 360 | 340 | ..... | 305 | 290 | 305 | 380 | 340 | ..... |
| 30 | 440 | 400 | 360 | 340 | ..... | 305 | 290 | 305 | 380 | 340 | ..... |
| 31 | 440 | ..... | 360 | 340 | ..... | 305 | ..... | 305 | ..... | 340 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Rising River near Cassel, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 460 | 420 | 447 | 27,500 | A. |
| November | 460 | 400 | 432 | 25,700 | A. |
| December | 400 | 360 | 381 | 23,400 | A. |
| January | 360 | 340 | 349 | 21,500 | A. |
| February | 340 | 320 | 326 | 18,100 | A. |
| March | 320 | 305 | 306 | 18,800 | A. |
| April | 305 | 290 | 298 | 17,700 | A. |
| May | 305 | 275 | 292 | 18,000 | A. |
| June | 380 | 305 | 344 | 20,500 | A. |
| July | 380 | 340 | 349 | 21,500 | A. |
| August | ..... | ..... | [a] 340 | 20,900 | B. |
| September | ..... | ..... | [a] 335 | 19,900 | B. |
| The year | ..... | ..... | 350 | 254,000 | |

[a] Estimated on basis of measurement of Sept. 15, 1913.

### BURNEY CREEK AT BURNEY, CAL.

LOCATION.—In the SW. ¼ sec. 19, T. 35 N., R. 3 E., at highway bridge three-fourths mile southwest of Burney, 3 miles above Goose Creek, and about 10 miles above junction with Pit River.

RECORDS AVAILABLE.—August 14, 1911, to August 9, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on upstream end of center pier of bridge.

CHANNEL.—Gravel and sand; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Two miles above the station about 2 second-feet of water is diverted for irrigation during the summer months and about 0.5 second-foot during the rest of the year.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Burney Creek at Burney, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 1 | Lasley Lee | 0.94 | 18 | May 7 | G. H. Canfield | 1.21 | 27 |
| Apr. 23 | G. H. Canfield | 2.94 | 153 | Sept. 13 | Lasley Lee | .72 | 14 |

*Daily gage height, in feet, of Burney Creek at Burney, Cal., for the year ending Sept. 30, 1913.*

[J. D. Rawlings and Samuel Ellery, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.70 | 0.95 | 1.1 | 1.5 | 1.2 | 1.1 | 2.4 | 2.45 | 2.4 | 1.65 | 1.15 |
| 2 | .80 | 1.0 | 1.1 | 1.3 | 1.15 | 1.1 | 2.4 | 2.45 | 2.3 | 1.6 | 1.2 |
| 3 | .80 | 1.05 | 1.1 | 1.2 | 1.15 | 1.1 | 2.25 | 2.5 | 2.3 | 1.5 | 1.2 |
| 4 | .80 | 1.0 | 1.1 | 1.2 | 1.15 | 1.2 | 2.5 | 2.5 | 2.2 | 1.45 | 1.25 |
| 5 | .80 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 2.8 | 3.0 | 2.2 | 1.4 | 1.2 |
| 6 | .80 | 3.2 | 1.1 | 1.1 | 1.1 | 1.2 | 2.6 | 3.0 | 2.1 | 1.4 | 1.2 |
| 7 | .80 | 2.5 | 1.1 | 1.1 | 1.1 | 1.3 | 2.4 | 3.0 | 2.05 | 1.35 | 1.2 |
| 8 | .80 | 2.0 | 1.05 | ..... | 1.1 | 1.3 | 2.3 | 3.1 | 2.15 | 1.3 | 1.2 |
| 9 | .80 | 2.5 | 1.0 | ..... | 1.15 | 1.3 | 2.4 | 3.6 | 2.0 | 1.2 | 1.2 |
| 10 | .80 | 2.6 | 1.0 | ..... | 1.2 | 1.45 | 2.45 | 3.5 | 2.0 | 1.2 | ..... |
| 11 | .80 | 2.1 | 1.0 | ..... | 1.2 | 1.6 | 2.6 | 3.5 | 1.95 | 1.2 | ..... |
| 12 | .85 | 1.9 | 1.0 | ..... | 1.2 | 1.7 | 2.8 | 3.3 | 1.9 | 1.2 | ..... |
| 13 | .85 | 1.75 | 1.1 | ..... | 1.2 | 1.6 | 3.0 | 3.2 | 1.8 | 1.2 | ..... |
| 14 | .85 | 1.9 | 1.5 | ..... | 1.2 | 1.6 | 2.8 | 3.0 | 1.75 | 1.15 | ..... |
| 15 | .85 | 1.9 | 2.2 | ..... | 1.2 | 1.5 | 2.7 | 2.9 | 1.7 | 1.2 | ..... |
| 16 | .85 | 1.7 | 2.0 | ..... | 1.25 | 1.5 | 2.5 | 2.9 | 1.6 | 1.2 | ..... |
| 17 | .85 | 1.6 | 1.8 | ..... | 1.3 | 1.6 | 2.5 | 2.9 | 1.55 | 1.2 | ..... |
| 18 | .85 | 1.5 | 1.75 | ..... | 1.3 | 1.6 | 2.7 | 3.4 | 1.45 | 1.2 | ..... |
| 19 | .85 | 1.7 | 1.7 | 2.4 | 1.3 | 1.7 | 2.7 | 3.1 | 1.4 | 1.15 | ..... |
| 20 | .85 | 1.5 | 1.6 | 2.4 | 1.2 | 1.6 | 2.9 | 2.95 | 1.4 | 1.15 | ..... |
| 21 | .88 | 1.4 | 1.5 | 2.4 | 1.2 | 1.75 | 3.0 | 2.85 | 1.4 | 1.2 | ..... |
| 22 | .90 | 1.4 | 1.5 | 2.35 | 1.2 | 2.0 | 3.1 | 2.7 | 1.35 | 1.2 | ..... |
| 23 | 1.1 | 1.3 | 1.5 | 2.0 | 1.1 | 1.8 | 3.1 | 2.6 | 1.5 | 1.2 | ..... |
| 24 | 1.0 | 1.3 | 1.6 | 1.85 | 1.15 | 1.55 | 3.1 | 2.6 | 1.5 | 1.25 | ..... |
| 25 | 1.1 | 1.3 | 1.75 | 1.7 | 1.2 | 1.5 | 3.0 | 2.5 | 1.5 | 1.25 | ..... |
| 26 | 1.1 | 1.25 | 1.8 | 1.6 | 1.2 | 1.4 | 3.0 | 2.5 | 2.4 | 1.2 | ..... |
| 27 | 1.05 | 1.2 | 1.8 | 1.5 | 1.2 | 1.35 | 3.0 | 2.45 | 2.3 | 1.2 | ..... |
| 28 | 1.0 | 1.2 | 1.8 | 1.4 | 1.1 | 1.5 | 3.0 | 2.5 | 2.15 | 1.25 | ..... |
| 29 | 1.05 | 1.2 | 1.8 | 1.3 | ..... | 1.65 | 2.5 | 2.5 | 1.95 | 1.2 | ..... |
| 30 | 1.0 | 1.15 | 1.85 | 1.2 | ..... | 1.8 | 2.5 | 2.5 | 1.8 | 1.2 | ..... |
| 31 | 1.0 | ..... | 1.9 | 1.2 | ..... | 2.1 | ..... | 2.45 | ..... | 1.2 | ..... |

NOTE.—Creek frozen over and covered with snow Jan. 8–16; rain Jan. 17 and 18.

*Daily discharge, in second-feet, of Burney Creek at Burney, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 19 | 23 | 37 | 26 | 23 | 93 | 98 | 93 | 44 | 24 |
| 2 | 16 | 20 | 23 | 29 | 24 | 23 | 93 | 98 | 84 | 41 | 26 |
| 3 | 16 | 22 | 23 | 26 | 24 | 23 | 80 | 102 | 84 | 37 | 26 |
| 4 | 16 | 20 | 23 | 26 | 24 | 26 | 102 | 102 | 76 | 35 | 28 |
| 5 | 16 | 23 | 23 | 23 | 23 | 26 | 133 | 156 | 76 | 33 | 26 |
| 6 | 16 | 182 | 23 | 23 | 23 | 26 | 112 | 156 | 68 | 33 | 26 |
| 7 | 16 | 102 | 23 | 23 | 23 | 29 | 93 | 156 | 65 | 31 | 26 |
| 8 | 16 | 62 | 22 | ..... | 23 | 29 | 84 | 168 | 72 | 29 | 26 |
| 9 | 16 | 102 | 20 | ..... | 24 | 29 | 93 | 240 | 62 | 26 | 26 |
| 10 | 16 | 112 | 20 | ..... | 26 | 35 | 98 | 225 | 62 | 26 | ..... |
| 11 | 16 | 68 | 20 | ..... | 26 | 41 | 112 | 225 | 59 | 26 | ..... |
| 12 | 17 | 56 | 20 | ..... | 26 | 46 | 133 | 196 | 56 | 26 | ..... |
| 13 | 17 | 48 | 23 | ..... | 26 | 41 | 156 | 182 | 51 | 26 | ..... |
| 14 | 17 | 56 | 39 | ..... | 26 | 41 | 133 | 156 | 48 | 24 | ..... |
| 15 | 17 | 56 | 76 | ..... | 26 | 37 | 122 | 144 | 46 | 26 | ..... |
| 16 | 17 | 46 | 62 | ..... | 28 | 37 | 102 | 144 | 41 | 26 | ..... |
| 17 | 17 | 41 | 51 | ..... | 29 | 41 | 102 | 144 | 39 | 26 | ..... |
| 18 | 17 | 37 | 48 | ..... | 29 | 41 | 122 | 210 | 35 | 26 | ..... |
| 19 | 17 | 46 | 46 | 93 | 29 | 46 | 122 | 168 | 33 | 24 | ..... |
| 20 | 17 | 37 | 41 | 93 | 26 | 41 | 144 | 150 | 33 | 24 | ..... |
| 21 | 18 | 33 | 37 | 93 | 26 | 48 | 156 | 138 | 33 | 26 | ..... |
| 22 | 18 | 33 | 37 | 88 | 26 | 62 | 168 | 122 | 31 | 26 | ..... |
| 23 | 23 | 29 | 37 | 62 | 23 | 51 | 168 | 112 | 37 | 26 | ..... |
| 24 | 20 | 29 | 41 | 54 | 24 | 39 | 168 | 112 | 37 | 28 | ..... |
| 25 | 23 | 29 | 48 | 46 | 26 | 37 | 156 | 102 | 37 | 28 | ..... |
| 26 | 23 | 28 | 51 | 41 | 26 | 33 | 156 | 102 | 93 | 26 | ..... |
| 27 | 22 | 26 | 51 | 37 | 26 | 31 | 156 | 98 | 84 | 26 | ..... |
| 28 | 20 | 26 | 51 | 33 | 23 | 37 | 156 | 102 | 72 | 28 | ..... |
| 29 | 22 | 26 | 51 | 29 | ..... | 44 | 102 | 102 | 59 | 26 | ..... |
| 30 | 20 | 24 | 54 | 26 | ..... | 51 | 102 | 102 | 51 | 26 | ..... |
| 31 | 20 | ..... | 56 | 26 | ..... | 68 | ..... | 98 | ..... | 26 | ..... |

NOTE.—Mean discharge Jan. 8–18 estimated as 44 second-feet from observer's notes and by comparison with records of Montgomery Creek at Montgomery Creek.

*Monthly discharge of Burney Creek at Burney, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 23 | 14 | 17.9 | 1,100 | C. |
| November | 182 | 19 | 47.9 | 2,850 | B. |
| December | 76 | 20 | 37.5 | 2,310 | C. |
| January | ..... | ..... | 44.9 | 2,760 | D. |
| February | 29 | 23 | 25.4 | 1,410 | C. |
| March | 68 | 23 | 38.1 | 2,340 | B. |
| April | 168 | 80 | 124 | 7,380 | B. |
| May | 240 | 98 | 142 | 8,730 | B. |
| June | 93 | 31 | 57.2 | 3,400 | B. |
| July | 44 | 24 | 28.4 | 1,750 | C. |
| August 1–9 | 28 | 24 | 26.0 | 464 | C. |
| The period | ..... | ..... | ..... | 34,500 | |

### KOSK CREEK NEAR HENDERSON, CAL.

LOCATION.—In sec. 12, T. 37 N., R. 1 W., in Shasta National Forest, above bridge on the Holm ranch, about 4 miles north of Henderson and 3½ miles above mouth. Baker Creek enters about one-fouth mile below station.

RECORDS AVAILABLE.—October 1, 1910, to September 30, 1913 (not complete).

DRAINAGE AREA.—51.9 square miles.

GAGE.—Vertical staff on an alder tree on left bank 100 feet above bridge.

CHANNEL.—Gravel and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curve well defined; results good for periods covered by gage-height records.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Kosk Creek near Henderson, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 30 | Lasley Lee | 3.05 | 36 | Apr. 8 | G. H. Canfield | 4.67 | 429 |
| Jan. 24 | G. H. Canfield | 3.70 | 126 | May 17 | do | 4.48 | 311 |
| Mar. 5 | do | 3.81 | 151 | Sept. 17 | Lasley Lee | 2.91 | 28 |

*Daily gage height, in feet, of Kosk Creek near Henderson, Cal., for the year ending Sept. 30, 1913.*

[H. R. Powers, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 3.05 | 3.28 | | | | 4.70 | 4.5 | 4.0 | | 3.17 | |
| 2 | | | | | 3.84 | | | | | | | 3.00 |
| 3 | | | | | | | | 4.45 | | | | |
| 4 | | | | 3.46 | | | 4.9 | 4.4 | | | | |
| 5 | 3.00 | | | | | 3.81 | 5.0 | | | | 3.14 | |
| 6 | | | | | 3.90 | | | | 3.80 | | | |
| 7 | | 3.66 | | | | | 4.8 | | | 3.48 | | |
| 8 | | | 3.28 | | | | 4.65 | | | | | 2.98 |
| 9 | | | | | | | | 4.9 | | | 3.10 | |
| 10 | 3.02 | | | | | 4.00 | 4.7 | 4.8 | 3.72 | | | 3.00 |
| 11 | | | | 3.52 | 4.05 | | | | | | | |
| 12 | | | | | | | 4.8 | 4.6 | | | 3.11 | |
| 13 | | | | | | | | | | | | 3.00 |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | 3.47 | | | | | 4.7 | 4.4 | 3.59 | 3.29 | | |
| 17 | | | | | | | 4.65 | 4.4 | | | 3.10 | 2.91 |
| 18 | | | | 3.58 | | 3.94 | 4.65 | | 3.52 | | | |
| 19 | | | | | | | | | | | | |
| 20 | 3.05 | | | | | | | | | 3.25 | 3.40 | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | 3.26 | | 2.98 |
| 23 | 3.05 | | | | 3.90 | | 4.8 | 4.3 | | | | |
| 24 | | 3.40 | | 3.70 | | | | 4.2 | | | 3.10 | 2.99 |
| 25 | | | | | | 3.89 | | | 3.40 | | | |
| 26 | | 3.28 | | | | | 5.1 | 4.15 | 3.60 | | | |
| 27 | | | 3.39 | | | | 4.95 | | 3.68 | 3.24 | | 3.00 |
| 28 | | | | | 3.79 | | 4.7 | | | | | |
| 29 | | | | 3.81 | | 3.90 | 4.7 | 3.98 | | 3.28 | | |
| 30 | 3.05 | | | | | | | | 3.49 | | | 3.00 |
| 31 | | | 3.41 | | | | | | | | 3.10 | |

*Daily discharge, in second-feet, of Kosk Creek near Henderson, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | 41 | 65 | 83 | 155 | 147 | 432 | 350 | 194 | 93 | 53 | 41 |
| 2 | 36 | 40 | 65 | 84 | 157 | 148 | 462 | 340 | 185 | 92 | 52 | 36 |
| 3 | 36 | 50 | 65 | 86 | 160 | 148 | 493 | 331 | 176 | 92 | 52 | 36 |
| 4 | 36 | 50 | 65 | 88 | 164 | 149 | 523 | 312 | 166 | 92 | 51 | 35 |
| 5 | 36 | 80 | 65 | 89 | 167 | 150 | 572 | 354 | 157 | 92 | 50 | 35 |
| 6 | 36 | 465 | 65 | 91 | 170 | 159 | 524 | 396 | 148 | 91 | 49 | 35 |
| 7 | 37 | 121 | 65 | 92 | 177 | 168 | 476 | 439 | 144 | 91 | 48 | 34 |
| 8 | 37 | 120 | 65 | 93 | 185 | 176 | 411 | 481 | 140 | 88 | 47 | 34 |
| 9 | 38 | 220 | 65 | 94 | 192 | 185 | 422 | 523 | 136 | 85 | 46 | 35 |
| 10 | 38 | 180 | 65 | 96 | 200 | 194 | 432 | 476 | 132 | 83 | 46 | 36 |
| 11 | 38 | 145 | 65 | 97 | 207 | 192 | 454 | 433 | 128 | 80 | 47 | 36 |
| 12 | 39 | 120 | 65 | 98 | 204 | 190 | 476 | 390 | 124 | 77 | 47 | 36 |
| 13 | 39 | 100 | 65 | 99 | 201 | 189 | 465 | 370 | 120 | 74 | 47 | 36 |
| 14 | 39 | 135 | 205 | 100 | 198 | 187 | 454 | 351 | 116 | 72 | 47 | 34 |
| 15 | 40 | 110 | 180 | 102 | 195 | 185 | 443 | 332 | 112 | 69 | 46 | 32 |
| 16 | 40 | 90 | 205 | 104 | 192 | 184 | 432 | 312 | 108 | 66 | 46 | 30 |
| 17 | 40 | 80 | 155 | 105 | 188 | 182 | 411 | 312 | 104 | 65 | 46 | 28 |
| 18 | 40 | 75 | 130 | 107 | 185 | 180 | 411 | 306 | 97 | 64 | 57 | 29 |
| 19 | 41 | 90 | 110 | 110 | 182 | 178 | 424 | 301 | 95 | 63 | 69 | 30 |
| 20 | 41 | 80 | 100 | 114 | 179 | 177 | 437 | 295 | 92 | 62 | 80 | 32 |
| 21 | 41 | 75 | 90 | 117 | 176 | 175 | 450 | 289 | 90 | 62 | 72 | 33 |
| 22 | 41 | 70 | 80 | 121 | 173 | 173 | 463 | 284 | 87 | 63 | 63 | 34 |
| 23 | 41 | 70 | 80 | 124 | 170 | 171 | 476 | 278 | 85 | 62 | 54 | 34 |
| 24 | 41 | 80 | 80 | 128 | 165 | 170 | 525 | 248 | 82 | 62 | 46 | 35 |
| 25 | 41 | 65 | 80 | 132 | 160 | 168 | 574 | 241 | 80 | 61 | 46 | 35 |
| 26 | 41 | 65 | 80 | 137 | 156 | 168 | 623 | 234 | 110 | 61 | 46 | 36 |
| 27 | 41 | 65 | 79 | 141 | 151 | 169 | 548 | 219 | 124 | 60 | 46 | 36 |
| 28 | 41 | 65 | 80 | 146 | 146 | 170 | 432 | 204 | 114 | 62 | 46 | 36 |
| 29 | 41 | 65 | 80 | 150 | ..... | 170 | 432 | 189 | 103 | 65 | 46 | 36 |
| 30 | 41 | 65 | 80 | 152 | ..... | 257 | 391 | 191 | 93 | 61 | 46 | 36 |
| 31 | 41 | ..... | 81 | 154 | ..... | 345 | ..... | 192 | ..... | 57 | 46 | ..... |

NOTE.—Daily discharge determined from a well-defined rating curve except as follows: For periods during November and December, 1912, for which gage heights are not recorded, estimated by comparison with graph of Montgomery Creek at Montgomery Creek; for other periods by interpolation. Results are therefore approximate and should be used with caution.

*Monthly discharge of Kosk Creek near Henderson, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 41 | 36 | 39.2 | 2,410 | B. |
| November | 465 | 40 | 103 | 6,130 | C. |
| December | 205 | 65 | 91.0 | 5,600 | C. |
| January | 154 | 83 | 111 | 6,820 | C. |
| February | 207 | 146 | 177 | 9,830 | C. |
| March | 345 | 147 | 181 | 11,100 | C. |
| April | 623 | 391 | 469 | 27,900 | D. |
| May | 523 | 189 | 322 | 19,800 | D. |
| June | 194 | 80 | 121 | 7,200 | C. |
| July | 93 | 57 | 73.1 | 4,490 | C. |
| August | 80 | 46 | 51.1 | 3,140 | B. |
| September | 41 | 28 | 34.4 | 2,050 | B. |
| The year | 623 | 28 | 147 | 106,000 | |

NOTE.—See footnote to table of daily discharge.

### MONTGOMERY CREEK AT MONTGOMERY CREEK, CAL.

LOCATION.—In sec. 36, T. 35 N., R. 1 W., at highway bridge about one-fourth mile south of Montgomery Creek and 2 miles above junction with Pit River.

RECORDS AVAILABLE.—August 11, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a large alder tree on left bank 70 feet below the bridge.

CHANNEL.—Small bowlders and gravel; rough; appears permanent.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

DIVERSIONS.—About 5 miles above the station the Terry Lumber Co. diverts water from this stream into Little Cow Creek. During the logging season, from June to December, this diversion is from 8 to 10 second-feet; for the rest of the year about 6 second-feet.

ACCURACY.—High-water rating curve not well defined; otherwise records are good.

*Discharge measurements of Montgomery Creek at Montgomery Creek, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 29 | Lasley Lee | 0.79 | 21 | May 20 | G. H. Canfield | 1.62 | 87 |
| Mar. 3 | G. H. Canfield | 1.21 | 44 | Sept. 13 | Lasley Lee | .57 | 14 |
| Apr. 17 | do | 1.82 | 122 | 16 | do | .58 | 14 |

*Daily gage height, in feet, of Montgomery Creek at Montgomery Creek, Cal., for the year ending Sept. 30, 1913.*

[Edwin Fowler, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.59 | 0.67 | 0.91 | 1.12 | 1.46 | 1.14 | 1.8 | 1.7 | 1.41 | 1.02 | 0.71 | ..... |
| 2 | .60 | .72 | .90 | 1.06 | 1.40 | 1.18 | 1.8 | 1.65 | 1.40 | .99 | .70 | ..... |
| 3 | .58 | .79 | .88 | 1.06 | 1.38 | 1.18 | 1.8 | 1.65 | 1.32 | 1.05 | .69 | ..... |
| 4 | .58 | .81 | .87 | 1.04 | 1.32 | 1.18 | 2.1 | 1.65 | 1.30 | .99 | .69 | ..... |
| 5 | .62 | 1.10 | .82 | 1.04 | 1.33 | 1.18 | 2.1 | 1.65 | 1.22 | 1.01 | .69 | ..... |
| 6 | .68 | 2.45 | .82 | 1.08 | 1.31 | 1.19 | 1.9 | 1.7 | 1.18 | 1.00 | .69 | ..... |
| 7 | .62 | 1.6 | .82 | 1.06 | 1.30 | 1.22 | 1.85 | 1.7 | 1.14 | .98 | .69 | ..... |
| 8 | .68 | 1.32 | .82 | 1.08 | 1.32 | 1.24 | 1.8 | 1.7 | 1.16 | .92 | .69 | ..... |
| 9 | .61 | 1.75 | .81 | 1.04 | 1.31 | 1.26 | 1.8 | 1.9 | 1.20 | .88 | .69 | ..... |
| 10 | .64 | 1.6 | .80 | 1.02 | 1.31 | 1.32 | 1.8 | 1.8 | 1.16 | .86 | .69 | ..... |
| 11 | .60 | 1.44 | .80 | 1.01 | 1.31 | 1.36 | 1.85 | 1.75 | 1.12 | .86 | ..... | ..... |
| 12 | .62 | 1.31 | .80 | 1.06 | 1.30 | 1.31 | 1.85 | 1.8 | 1.12 | .84 | ..... | ..... |
| 13 | .67 | 1.20 | .95 | 1.20 | 1.28 | 1.28 | 1.9 | 1.7 | 1.10 | .82 | ..... | 0.57 |
| 14 | .60 | 1.40 | 1.7 | 1.26 | 1.28 | 1.24 | 1.9 | 1.65 | 1.08 | .89 | ..... | ..... |
| 15 | .60 | 1.25 | 1.6 | 1.39 | 1.32 | 1.22 | 1.9 | 1.65 | 1.08 | .84 | ..... | ..... |
| 16 | .67 | 1.15 | 1.7 | 1.24 | 1.34 | 1.22 | 1.85 | 1.6 | 1.06 | .84 | ..... | .58 |
| 17 | .61 | 1.10 | 1.48 | 1.21 | 1.36 | 1.24 | 1.85 | 1.6 | 1.08 | .82 | ..... | ..... |
| 18 | .61 | 1.06 | 1.36 | 2.05 | 1.34 | 1.36 | 1.95 | 1.9 | 1.06 | .81 | ..... | ..... |
| 19 | .67 | 1.14 | 1.28 | 1.5 | 1.31 | 1.47 | 1.9 | 1.7 | 1.10 | .82 | ..... | ..... |
| 20 | .60 | 1.08 | 1.20 | 1.37 | 1.28 | 1.38 | 1.9 | 1.6 | 1.05 | .81 | ..... | ..... |
| 21 | .60 | 1.04 | 1.15 | 1.31 | 1.26 | 1.5 | 1.9 | 1.6 | 1.01 | .80 | ..... | ..... |
| 22 | .68 | 1.02 | 1.10 | 1.26 | 1.24 | 1.45 | 1.9 | 1.55 | 1.08 | .79 | ..... | ..... |
| 23 | .70 | 1.00 | 1.10 | 1.20 | 1.26 | 1.34 | 1.85 | 1.55 | 1.08 | .82 | ..... | ..... |
| 24 | .62 | 1.00 | 1.08 | 1.20 | 1.22 | 1.31 | 1.9 | 1.5 | 1.06 | .82 | ..... | ..... |
| 25 | .85 | .98 | 1.08 | 1.55 | 1.24 | 1.32 | 1.95 | 1.5 | 1.02 | .80 | ..... | ..... |
| 26 | .74 | .96 | 1.02 | 1.46 | 1.21 | 1.29 | 1.95 | 1.44 | 1.20 | .80 | ..... | ..... |
| 27 | .73 | .94 | 1.01 | 1.42 | 1.20 | 1.34 | 1.95 | 1.5 | 1.22 | .80 | ..... | ..... |
| 28 | .72 | .92 | 1.00 | 1.40 | 1.18 | 1.39 | 1.85 | 1.48 | 1.14 | .79 | ..... | ..... |
| 29 | .80 | .90 | 1.01 | 1.36 | ..... | 1.6 | 1.8 | 1.42 | 1.04 | .76 | ..... | ..... |
| 30 | .72 | .90 | 1.14 | 1.40 | ..... | 1.7 | 1.15 | 1.34 | 1.03 | .75 | ..... | ..... |
| 31 | .68 | ..... | 1.22 | 1.48 | ..... | 1.75 | ..... | 1.34 | ..... | .72 | ..... | ..... |

*Daily discharge, in second-feet, of Montgomery Creek at Montgomery Creek, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17 | 19 | 30 | 43 | 75 | 44 | 116 | 103 | 79 | 35 | 19 | 16 |
| 2 | 17 | 21 | 29 | 38 | 68 | 47 | 116 | 97 | 68 | 33 | 19 | 16 |
| 3 | 17 | 24 | 28 | 38 | 66 | 47 | 116 | 97 | 60 | 38 | 19 | 15 |
| 4 | 17 | 24 | 28 | 37 | 60 | 47 | 163 | 97 | 58 | 33 | 19 | 15 |
| 5 | 18 | 41 | 25 | 37 | 61 | 47 | 163 | 97 | 51 | 35 | 19 | 15 |
| 6 | 19 | 232 | 25 | 40 | 59 | 48 | 130 | 103 | 47 | 34 | 19 | 15 |
| 7 | 18 | 91 | 25 | 38 | 58 | 51 | 123 | 103 | 44 | 33 | 19 | 15 |
| 8 | 19 | 60 | 25 | 40 | 60 | 53 | 116 | 103 | 46 | 29 | 19 | 15 |
| 9 | 17 | 110 | 24 | 37 | 59 | 54 | 116 | 130 | 49 | 27 | 19 | 15 |
| 10 | 18 | 91 | 24 | 35 | 59 | 60 | 116 | 116 | 46 | 26 | 19 | 14 |
| 11 | 17 | 72 | 24 | 35 | 59 | 64 | 123 | 110 | 43 | 26 | 19 | 14 |
| 12 | 18 | 59 | 24 | 38 | 58 | 59 | 123 | 116 | 43 | 25 | 19 | 14 |
| 13 | 19 | 49 | 32 | 49 | 56 | 56 | 130 | 103 | 41 | 24 | 19 | 14 |
| 14 | 17 | 68 | 103 | 54 | 56 | 53 | 130 | 97 | 40 | 28 | 18 | 14 |
| 15 | 17 | 54 | 91 | 67 | 60 | 51 | 130 | 97 | 40 | 25 | 18 | 14 |
| 16 | 19 | 45 | 103 | 53 | 62 | 51 | 123 | 91 | 38 | 25 | 18 | 14 |
| 17 | 17 | 41 | 77 | 50 | 64 | 53 | 123 | 91 | 40 | 24 | 18 | 14 |
| 18 | 17 | 38 | 64 | 154 | 62 | 64 | 138 | 130 | 38 | 24 | 18 | 14 |
| 19 | 19 | 44 | 56 | 79 | 59 | 76 | 130 | 103 | 41 | 24 | 18 | 14 |
| 20 | 17 | 40 | 49 | 65 | 56 | 66 | 130 | 91 | 38 | 24 | 18 | 14 |
| 21 | 17 | 37 | 45 | 59 | 54 | 79 | 130 | 91 | 35 | 23 | 17 | 14 |
| 22 | 19 | 35 | 41 | 54 | 53 | 74 | 130 | 85 | 40 | 23 | 17 | 14 |
| 23 | 20 | 34 | 41 | 49 | 54 | 62 | 123 | 85 | 40 | 24 | 17 | 14 |
| 24 | 18 | 34 | 40 | 49 | 51 | 59 | 130 | 79 | 38 | 24 | 17 | 14 |
| 25 | 26 | 33 | 40 | 85 | 53 | 60 | 138 | 79 | 35 | 23 | 17 | 14 |
| 26 | 22 | 32 | 35 | 75 | 50 | 57 | 138 | 72 | 49 | 23 | 17 | 14 |
| 27 | 21 | 31 | 35 | 70 | 49 | 62 | 138 | 79 | 51 | 23 | 16 | 14 |
| 28 | 21 | 30 | 34 | 68 | 47 | 67 | 123 | 77 | 44 | 23 | 16 | 14 |
| 29 | 24 | 29 | 35 | 64 | ..... | 91 | 116 | 70 | 37 | 21 | 16 | 14 |
| 30 | 21 | 29 | 44 | 68 | ..... | 103 | 110 | 62 | 36 | 21 | 16 | 14 |
| 31 | 19 | ..... | 51 | 77 | ..... | 110 | ..... | 62 | ..... | 20 | 16 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1, 1912, to Apr. 5, 1913, well defined below 200 second-feet; Apr. 6 to Sept. 30, 1913, well defined. Discharge interpolated for days for which gage heights are not recorded.

*Monthly discharge of Montgomery Creek at Montgomery Creek, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 26 | 17 | 18.8 | 1,160 | B. |
| November | 232 | 19 | 51.6 | 3,070 | B. |
| December | 103 | 24 | 42.8 | 2,630 | B. |
| January | 154 | 35 | 56.3 | 3,460 | B. |
| February | 75 | 47 | 58.1 | 3,230 | B. |
| March | 110 | 44 | 61.8 | 3,800 | B. |
| April | 163 | 110 | 128 | 7,620 | A. |
| May | 130 | 62 | 94.1 | 5,790 | A. |
| June | 79 | 35 | 45.2 | 2,690 | B. |
| July | 38 | 20 | 26.5 | 1,630 | B. |
| August | 19 | 16 | 17.9 | 1,110 | C. |
| September | 16 | 14 | 14.4 | 857 | C. |
| The year | 232 | 14 | 51.1 | 37,000 | |

### SQUAW CREEK AT YDALPOM, CAL.

LOCATION.—In sec. 29, T. 34 N., R. 3 W., at the highway bridge, three-fourths mile southwest of Ydalpom (Copper City), and three-fourths mile above junction with Pit River.

RECORDS AVAILABLE.—October 4, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream end of bridge on right bank.

CHANNEL.—Gravel and small bowlders; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—One small ditch diverts water for irrigation above the station.

ACCURACY.—High-water part of rating curve not well defined; otherwise record is excellent.

*Discharge measurements of Squaw Creek at Ydalpom, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 10 | Lasley Lee | 3.99 | 652 | Apr. 10 | G. H. Canfield | 3.50 | 502 |
| Feb. 26 | G. H. Canfield | 2.75 | 268 | Sept. 1 | Lasley Lee | 1.38 | 24 |

*Daily gage height, in feet, of Squaw Creek at Ydalpom, Cal., for the year ending Sept. 30, 1913.*

[Mrs. Lem Williams, observer.]

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 2.0 | 2.0 | 2.85 | 4.0 | 2.6 | 3.7 | 2.7 | 2.25 | 1.7 | 1.5 |
| 2 | 1.6 | 1.8 | 1.95 | 2.7 | 4.0 | 2.6 | 3.7 | 2.7 | 2.25 | 1.7 | 1.5 |
| 3 | 1.6 | 1.8 | 1.95 | 2.6 | 3.9 | 2.6 | 4.0 | 2.65 | 2.25 | 1.7 | 1.5 |
| 4 | 1.6 | 1.7 | 1.95 | 2.6 | 3.7 | 2.6 | 4.5 | 2.65 | 2.2 | 1.7 | 1.5 |
| 5 | 1.6 | 3.0 | 1.9 | 2.5 | 3.5 | 2.6 | 4.3 | 2.6 | 2.2 | 1.65 | 1.5 |
| 6 | 1.6 | 4.7 | 1.9 | 2.5 | 3.5 | 2.6 | 4.3 | 3.0 | 2.2 | 1.65 | 1.5 |
| 7 | 1.6 | 3.45 | 1.85 | 2.45 | 3.5 | 2.6 | 4.0 | 2.7 | 2.15 | 1.65 | 1.5 |
| 8 | 1.6 | 2.3 | 1.8 | 2.4 | 3.5 | 2.6 | 3.8 | 2.7 | 2.15 | 1.6 | 1.45 |
| 9 | 1.6 | 3.9 | 1.8 | 2.3 | 3.5 | 2.6 | 3.6 | 2.7 | 2.15 | 1.6 | 1.45 |
| 10 | 1.6 | 4.0 | 1.8 | 2.3 | 3.5 | 2.6 | 3.5 | 2.85 | 2.1 | 1.6 | 1.45 |
| 11 | 1.6 | 3.8 | 1.8 | 2.3 | 3.4 | 2.6 | 3.4 | 2.8 | 2.1 | 1.6 | ..... |
| 12 | 1.6 | 3.5 | 1.8 | 2.5 | 3.4 | 2.55 | 3.4 | 2.9 | 2.1 | 1.55 | ..... |
| 13 | 1.6 | 3.1 | 1.8 | 4.8 | 3.35 | 2.55 | 3.35 | 2.75 | 2.1 | 1.55 | ..... |
| 14 | 1.6 | 3.6 | 3.3 | 6.2 | 3.35 | 2.5 | 3.5 | 2.75 | 2.1 | 1.55 | ..... |
| 15 | 1.6 | 3.05 | 4.6 | 6.8 | 3.3 | 2.5 | 3.7 | 2.7 | 2.05 | 1.5 | ..... |
| 16 | 1.6 | 2.7 | 5.4 | 5.6 | 3.3 | 2.45 | 3.6 | 2.65 | 2.05 | 1.5 | ..... |
| 17 | 1.6 | 2.55 | 4.2 | 5.1 | 3.25 | 2.45 | 3.4 | 2.6 | 2.05 | 1.5 | ..... |
| 18 | 1.6 | 2.4 | 3.6 | 11.4 | 2.7 | 2.5 | 3.7 | 2.55 | 2.05 | 1.5 | ..... |
| 19 | 1.6 | 2.3 | 3.15 | 7.4 | 2.5 | 2.6 | 3.6 | 2.5 | 2.55 | 1.5 | ..... |
| 20 | 1.6 | 2.25 | 2.9 | 5.4 | 2.35 | 2.75 | 3.5 | 2.45 | 2.02 | 1.5 | ..... |
| 21 | 1.6 | 2.2 | 2.8 | 4.1 | 2.3 | 4.2 | 3.5 | 2.45 | 1.9 | 1.5 | ..... |
| 22 | 2.0 | 2.15 | 2.8 | 4.0 | 2.3 | 4.8 | 3.4 | 2.4 | 1.9 | 1.5 | ..... |
| 23 | 1.7 | 2.1 | 2.75 | 3.9 | 2.7 | 4.1 | 3.3 | 2.4 | 1.9 | 1.5 | ..... |
| 24 | 1.7 | 2.05 | 2.75 | 3.7 | 3.05 | 3.7 | 3.2 | 2.4 | 1.9 | 1.5 | ..... |
| 25 | 2.0 | 2.05 | 2.7 | 3.6 | 3.0 | 3.4 | 3.1 | 2.35 | 1.9 | 1.5 | ..... |
| 26 | 1.8 | 2.0 | 2.7 | 3.15 | 2.75 | 3.5 | 3.0 | 2.35 | 1.85 | 1.5 | ..... |
| 27 | 1.7 | 2.0 | 2.4 | 4.0 | 2.75 | 3.6 | 2.9 | 2.3 | 1.85 | 1.5 | ..... |
| 28 | 1.6 | 2.0 | 2.3 | 4.2 | 2.7 | 3.6 | 2.85 | 2.3 | 1.85 | 1.5 | ..... |
| 29 | 1.6 | 2.0 | 2.25 | 4.1 | ..... | 3.7 | 2.8 | 2.25 | 1.85 | 1.5 | ..... |
| 30 | 1.6 | 2.0 | 2.5 | 4.0 | ..... | 3.7 | 2.75 | 2.25 | 1.85 | 1.5 | ..... |
| 31 | 1.6 | ..... | 2.6 | 4.0 | ..... | 3.7 | ..... | 2.25 | ..... | 1.5 | ..... |

*Daily discharge, in second-feet, of Squaw Creek at Ydalpom, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 34 | 94 | 94 | 288 | 690 | 230 | 564 | 255 | 153 | 61 | 37 |
| 2 | 34 | 60 | 85 | 218 | 690 | 230 | 564 | 255 | 153 | 61 | 37 |
| 3 | 34 | 60 | 85 | 224 | 616 | 230 | 690 | 242 | 153 | 61 | 37 |
| 4 | 34 | 46 | 85 | 224 | 564 | 230 | 930 | 242 | 143 | 61 | 37 |
| 5 | 34 | 330 | 76 | 200 | 490 | 230 | 831 | 230 | 143 | 55 | 37 |
| 6 | 34 | 1,030 | 76 | 200 | 490 | 230 | 831 | 335 | 143 | 55 | 37 |
| 7 | 34 | 473 | 68 | 189 | 490 | 230 | 690 | 255 | 134 | 55 | 37 |
| 8 | 34 | 156 | 60 | 178 | 490 | 230 | 604 | 255 | 134 | 49 | 32 |
| 9 | 34 | 646 | 60 | 156 | 490 | 230 | 526 | 255 | 134 | 49 | 32 |
| 10 | 34 | 690 | 60 | 156 | 490 | 230 | 490 | 292 | 125 | 49 | 32 |
| 11 | 34 | 604 | 60 | 156 | 455 | 230 | 455 | 280 | 125 | 49 | ..... |
| 12 | 34 | 490 | 60 | 200 | 455 | 218 | 455 | 305 | 125 | 43 | ..... |
| 13 | 34 | 360 | 60 | 1,090 | 440 | 218 | 440 | 268 | 125 | 43 | ..... |
| 14 | 34 | 526 | 422 | 2,050 | 440 | 205 | 490 | 268 | 125 | 43 | ..... |
| 15 | 34 | 345 | 981 | 2,560 | 425 | 205 | 564 | 255 | 116 | 37 | ..... |
| 16 | 34 | 248 | 1,450 | 1,590 | 425 | 194 | 526 | 242 | 116 | 37 | ..... |
| 17 | 34 | 212 | 783 | 1,260 | 410 | 194 | 455 | 230 | 116 | 37 | ..... |
| 18 | 34 | 178 | 526 | 7,190 | 305 | 205 | 564 | 218 | 116 | 37 | ..... |
| 19 | 34 | 156 | 375 | 3,100 | 205 | 230 | 526 | 205 | 218 | 37 | ..... |
| 20 | 34 | 146 | 302 | 1,450 | 173 | 268 | 490 | 194 | 111 | 37 | ..... |
| 21 | 34 | 135 | 274 | 736 | 163 | 783 | 490 | 194 | 91 | 37 | ..... |
| 22 | 94 | 124 | 274 | 690 | 163 | 1,090 | 455 | 183 | 91 | 37 | ..... |
| 23 | 46 | 114 | 261 | 646 | 255 | 736 | 425 | 183 | 91 | 37 | ..... |
| 24 | 46 | 104 | 261 | 564 | 350 | 564 | 395 | 183 | 91 | 37 | ..... |
| 25 | 94 | 104 | 248 | 526 | 335 | 455 | 365 | 173 | 91 | 37 | ..... |
| 26 | 60 | 94 | 248 | 380 | 268 | 490 | 335 | 173 | 83 | 37 | ..... |
| 27 | 46 | 94 | 178 | 690 | 268 | 526 | 305 | 163 | 83 | 37 | ..... |
| 28 | 34 | 94 | 156 | 783 | 255 | 526 | 292 | 163 | 83 | 37 | ..... |
| 29 | 34 | 94 | 146 | 736 | ..... | 564 | 280 | 153 | 83 | 37 | ..... |
| 30 | 34 | 94 | 200 | 690 | ..... | 564 | 268 | 153 | 83 | 37 | ..... |
| 31 | 34 | ..... | 224 | 690 | ..... | 564 | ..... | 153 | ..... | 37 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct 1, 1912, to Jan. 18, 1913, well defined between 250 and 1,500 second-feet; Jan. 19 to Aug. 10, 1913, fairly well defined below 1,500 second-feet.

*Monthly discharge of Squaw Creek at Ydalpom, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 94 | 34 | 39.9 | 2,450 | C. |
| November | 1,030 | 46 | 263 | 15,600 | B. |
| December | 1,450 | 60 | 266 | 16,400 | B. |
| January | 7,190 | 156 | 963 | 59,200 | C. |
| February | 690 | 163 | 404 | 22,400 | B. |
| March | 1,090 | 194 | 365 | 22,400 | B. |
| April | 930 | 268 | 510 | 30,300 | B. |
| May | 335 | 153 | 224 | 13,800 | B. |
| June | 218 | 83 | 119 | 7,080 | B. |
| July | 61 | 37 | 44.0 | 2,700 | C. |
| August 1–10 | 37 | 32 | 35.5 | 704 | C. |
| The period | ..... | ..... | ..... | 193,000 | |

### McCLOUD RIVER AT BAIRD, CAL.

LOCATION.—In the NW. ¼ sec. 23, T. 34 N., R. 4 W., at the United States fishery at Baird, about 2 miles above junction with Pit River. Bailey Creek enters about 2,000 feet above and Johns Creek 2,000 feet below the station.

RECORD AVAILABLE.—December 22, 1910, to September 30, 1913.

DRAINAGE AREA.—665 square miles.

GAGE.—Vertical staff fastened to an alder tree on right bank, 600 feet above the hatchery.

CHANNEL.—Gravel and small bowlders; appears permanent.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet above gage.

ACCURACY.—Rating curve well defined; results excellent.

COOPERATION.—Gage-height record furnished by G. H. Lambson, superintendent of United States fishery.

*Discharge measurements of McCloud River at Baird, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 12 | Lasley Lee | 3.16 | 2,030 | Sept. 2 | Lasley Lee | 1.89 | 1,160 |
| Feb. 27 | G. H. Canfield | 2.53 | 1,560 | | | | |

*Daily gage height, in feet, of McCloud River at Baird, Cal., for the year ending Sept. 30, 1913.*

[G. H. Lambson, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.8 | 1.8 | 2.1 | 2.6 | 3.4 | 2.4 | 3.4 | 3.4 | 2.9 | 2.2 | 2.0 | 1.9 |
| 2 | 1.8 | 1.8 | 2.1 | 2.5 | 3.4 | 2.4 | 3.4 | 3.3 | 2.9 | 2.2 | 2.0 | 1.9 |
| 3 | 1.9 | 1.9 | 2.1 | 2.5 | 3.4 | 2.4 | 3.3 | 3.8 | 2.9 | 2.2 | 2.0 | 1.8 |
| 4 | 1.9 | 2.0 | 2.1 | 2.5 | 3.2 | 2.4 | 3.5 | 3.5 | 2.8 | 2.2 | 2.0 | 1.8 |
| 5 | 1.9 | 2.2 | 2.0 | 2.4 | 3.1 | 2.5 | 4.5 | 3.3 | 2.8 | 2.2 | 1.9 | 1.8 |
| 6 | 1.9 | 3.9 | 2.0 | 2.3 | 3.0 | 2.6 | 4.3 | 3.4 | 2.7 | 2.2 | 1.9 | 1.8 |
| 7 | 1.9 | 2.8 | 2.0 | 2.3 | 3.0 | 2.7 | 4.0 | 3.5 | 2.7 | 2.1 | 1.9 | 1.8 |
| 8 | 1.9 | 2.4 | 2.0 | 2.4 | 3.0 | 2.8 | 3.8 | 3.6 | 2.6 | 2.1 | 1.9 | 1.8 |
| 9 | 1.9 | 4.7 | 2.0 | 2.3 | 3.0 | 2.9 | 3.7 | 4.5 | 2.7 | 2.1 | 1.9 | 1.8 |
| 10 | 1.9 | 6.2 | 2.0 | 2.3 | 3.1 | 3.0 | 3.6 | 4.5 | 2.6 | 2.1 | 1.9 | 1.8 |
| 11 | 1.9 | 4.0 | 2.0 | 2.2 | 3.1 | 3.0 | 3.7 | 4.2 | 2.5 | 2.1 | 1.9 | 1.8 |
| 12 | 1.9 | 3.2 | 2.0 | 2.4 | 3.1 | 3.0 | 3.8 | 4.2 | 2.5 | 2.1 | 1.9 | 1.8 |
| 13 | 1.9 | 3.9 | 2.0 | 2.6 | 3.0 | 2.9 | 3.8 | 4.0 | 2.5 | 2.1 | 1.9 | 1.8 |
| 14 | 2.0 | 3.6 | 2.2 | 4.2 | 3.0 | 2.8 | 3.9 | 3.8 | 2.5 | 2.1 | 1.9 | 1.8 |
| 15 | 2.0 | 3.8 | 3.9 | 5.2 | 3.0 | 2.7 | 4.0 | 3.8 | 2.4 | 2.0 | 1.9 | 1.8 |
| 16 | 2.0 | 3.4 | 4.2 | 4.5 | 3.1 | 2.7 | 3.9 | 3.8 | 2.4 | 2.0 | 1.9 | 1.8 |
| 17 | 2.0 | 3.0 | 3.7 | 3.8 | 3.1 | 2.7 | 3.8 | 3.7 | 2.3 | 2.0 | 1.9 | 1.8 |
| 18 | 2.0 | 2.7 | 3.4 | 8.3 | 3.2 | 2.8 | 3.9 | 4.0 | 2.3 | 2.0 | 1.8 | 1.8 |
| 19 | 2.0 | 2.6 | 3.2 | 6.0 | 3.1 | 2.8 | 3.9 | 3.7 | 2.5 | 2.0 | 1.8 | 1.8 |
| 20 | 2.0 | 2.6 | 3.0 | 4.6 | 3.0 | 2.8 | 4.0 | 3.7 | 2.4 | 2.0 | 1.8 | 1.8 |
| 21 | 2.0 | 2.5 | 2.8 | 3.9 | 2.9 | 3.0 | 4.0 | 3.5 | 2.3 | 2.0 | 1.8 | 1.8 |
| 22 | 1.8 | 2.4 | 2.7 | 3.6 | 2.8 | 3.1 | 4.0 | 3.5 | 2.3 | 2.0 | 1.8 | 1.8 |
| 23 | 1.9 | 2.4 | 2.6 | 3.2 | 2.7 | 3.1 | 3.9 | 3.5 | 2.5 | 2.0 | 1.8 | 1.8 |
| 24 | 1.8 | 2.4 | 2.5 | 3.1 | 2.7 | 2.9 | 3.8 | 3.5 | 2.3 | 2.2 | 1.9 | 1.8 |
| 25 | 2.0 | 2.3 | 2.5 | 3.0 | 2.6 | 2.9 | 3.9 | 3.4 | 2.3 | 2.1 | 1.9 | 1.8 |
| 26 | 2.0 | 2.2 | 2.4 | 3.1 | 2.6 | 2.8 | 4.0 | 3.4 | 2.4 | 2.0 | 1.9 | 1.8 |
| 27 | 2.0 | 2.2 | 2.4 | 3.3 | 2.5 | 2.8 | 4.0 | 3.3 | 2.5 | 2.0 | 1.9 | 1.8 |
| 28 | 1.9 | 2.2 | 2.3 | 3.3 | 2.4 | 2.8 | 3.8 | 3.1 | 2.4 | 2.0 | 1.9 | 1.8 |
| 29 | 2.0 | 2.2 | 2.3 | 3.3 | ..... | 2.8 | 3.7 | 3.0 | 2.3 | 2.0 | 1.9 | 1.8 |
| 30 | 1.9 | 2.1 | 2.4 | 3.3 | ..... | 3.0 | 3.5 | 3.0 | 2.2 | 2.0 | 1.9 | 1.8 |
| 31 | 1.9 | ..... | 2.6 | 3.3 | ..... | 3.2 | ..... | 2.9 | ..... | 2.0 | 1.9 | ..... |

*Daily discharge, in second-feet, of McCloud River at Baird, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,150 | 1,150 | 1,300 | 1,600 | 2,210 | 1,480 | 2,210 | 2,210 | 1,810 | 1,360 | 1,250 | 1,200 |
| 2 | 1,150 | 1,150 | 1,300 | 1,540 | 2,210 | 1,480 | 2,210 | 2,120 | 1,810 | 1,360 | 1,250 | 1,200 |
| 3 | 1,200 | 1,200 | 1,300 | 1,540 | 2,210 | 1,480 | 2,120 | 2,600 | 1,810 | 1,360 | 1,250 | 1,150 |
| 4 | 1,200 | 1,250 | 1,300 | 1,540 | 2,040 | 1,480 | 2,300 | 2,300 | 1,740 | 1,360 | 1,250 | 1,150 |
| 5 | 1,200 | 1,360 | 1,250 | 1,480 | 1,960 | 1,540 | 3,400 | 2,120 | 1,740 | 1,360 | 1,200 | 1,150 |
| 6 | 1,200 | 2,710 | 1,250 | 1,420 | 1,880 | 1,600 | 3,160 | 2,210 | 1,670 | 1,360 | 1,200 | 1,150 |
| 7 | 1,200 | 1,740 | 1,250 | 1,420 | 1,880 | 1,670 | 2,820 | 2,300 | 1,670 | 1,300 | 1,200 | 1,150 |
| 8 | 1,200 | 1,480 | 1,250 | 1,480 | 1,880 | 1,740 | 2,600 | 2,400 | 1,600 | 1,300 | 1,200 | 1,150 |
| 9 | 1,200 | 3,650 | 1,250 | 1,420 | 1,880 | 1,810 | 2,500 | 3,400 | 1,670 | 1,300 | 1,200 | 1,150 |
| 10 | 1,200 | 5,950 | 1,250 | 1,420 | 1,960 | 1,880 | 2,400 | 3,400 | 1,600 | 1,300 | 1,200 | 1,150 |
| 11 | 1,200 | 2,820 | 1,250 | 1,360 | 1,960 | 1,880 | 2,500 | 3,040 | 1,540 | 1,300 | 1,200 | 1,150 |
| 12 | 1,200 | 2,040 | 1,250 | 1,480 | 1,960 | 1,880 | 2,600 | 3,040 | 1,540 | 1,300 | 1,200 | 1,150 |
| 13 | 1,200 | 2,710 | 1,250 | 1,600 | 1,880 | 1,810 | 2,600 | 2,820 | 1,540 | 1,300 | 1,200 | 1,150 |
| 14 | 1,250 | 2,400 | 1,360 | 3,040 | 1,880 | 1,740 | 2,710 | 2,600 | 1,540 | 1,300 | 1,200 | 1,150 |
| 15 | 1,250 | 2,600 | 2,710 | 4,330 | 1,880 | 1,670 | 2,820 | 2,600 | 1,480 | 1,250 | 1,200 | 1,150 |
| 16 | 1,250 | 2,210 | 3,040 | 3,400 | 1,960 | 1,670 | 2,710 | 2,600 | 1,480 | 1,250 | 1,200 | 1,150 |
| 17 | 1,250 | 1,880 | 2,500 | 2,600 | 1,960 | 1,670 | 2,600 | 2,500 | 1,420 | 1,250 | 1,200 | 1,150 |
| 18 | 1,250 | 1,670 | 2,210 | 10,500 | 2,040 | 1,740 | 2,710 | 2,820 | 1,420 | 1,250 | 1,150 | 1,150 |
| 19 | 1,250 | 1,600 | 2,040 | 5,600 | 1,960 | 1,740 | 2,710 | 2,500 | 1,540 | 1,250 | 1,150 | 1,150 |
| 20 | 1,250 | 1,600 | 1,880 | 3,520 | 1,880 | 1,740 | 2,820 | 2,500 | 1,480 | 1,250 | 1,150 | 1,150 |
| 21 | 1,250 | 1,540 | 1,740 | 2,710 | 1,810 | 1,880 | 2,820 | 2,300 | 1,420 | 1,250 | 1,150 | 1,150 |
| 22 | 1,150 | 1,480 | 1,670 | 2,400 | 1,740 | 1,960 | 2,820 | 2,300 | 1,420 | 1,250 | 1,150 | 1,150 |
| 23 | 1,200 | 1,480 | 1,600 | 2,040 | 1,670 | 1,960 | 2,710 | 2,300 | 1,540 | 1,250 | 1,150 | 1,150 |
| 24 | 1,150 | 1,480 | 1,540 | 1,960 | 1,670 | 1,810 | 2,600 | 2,300 | 1,420 | 1,360 | 1,200 | 1,150 |
| 25 | 1,250 | 1,420 | 1,540 | 1,880 | 1,600 | 1,810 | 2,710 | 2,210 | 1,420 | 1,300 | 1,200 | 1,150 |
| 26 | 1,250 | 1,360 | 1,480 | 1,960 | 1,600 | 1,740 | 2,820 | 2,210 | 1,480 | 1,250 | 1,200 | 1,150 |
| 27 | 1,250 | 1,360 | 1,480 | 2,120 | 1,540 | 1,740 | 2,820 | 2,120 | 1,540 | 1,250 | 1,200 | 1,150 |
| 28 | 1,200 | 1,360 | 1,420 | 2,120 | 1,480 | 1,740 | 2,600 | 1,960 | 1,480 | 1,250 | 1,200 | 1,150 |
| 29 | 1,250 | 1,360 | 1,420 | 2,120 | ..... | 1,740 | 2,500 | 1,880 | 1,420 | 1,250 | 1,200 | 1,150 |
| 30 | 1,200 | 1,300 | 1,480 | 2,120 | ..... | 1,880 | 2,300 | 1,880 | 1,360 | 1,250 | 1,200 | 1,150 |
| 31 | 1,200 | ..... | 1,600 | 2,120 | ..... | 2,040 | ..... | 1,810 | ..... | 1,250 | 1,200 | ..... |

NOTE.—Daily discharge determined from a rating curve well defined below 17,000 second-feet.

*Monthly discharge of McCloud River at Baird, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 665 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 1,250 | 1,150 | 1,210 | 1.82 | 2.10 | 74,400 | B. |
| November | 5,950 | 1,150 | 1,910 | 2.87 | 3.20 | 114,000 | A. |
| December | 3,040 | 1,250 | 1,590 | 2.39 | 2.76 | 97,800 | A. |
| January | 10,500 | 1,360 | 2,450 | 3.68 | 4.24 | 151,000 | A. |
| February | 2,210 | 1,480 | 1,880 | 2.83 | 2.95 | 104,000 | A. |
| March | 2,040 | 1,480 | 1,740 | 2.62 | 3.02 | 107,000 | A. |
| April | 3,400 | 2,120 | 2,640 | 3.97 | 4.43 | 157,000 | A. |
| May | 3,400 | 1,810 | 2,430 | 3.65 | 4.21 | 149,000 | A. |
| June | 1,810 | 1,360 | 1,550 | 2.33 | 2.60 | 92,200 | A. |
| July | 1,360 | 1,250 | 1,290 | 1.94 | 2.24 | 79,300 | A. |
| August | 1,250 | 1,150 | 1,200 | 1.80 | 2.08 | 73,800 | B. |
| September | 1,200 | 1,150 | 1,150 | 1.73 | 1.93 | 68,400 | B. |
| The year | 10,500 | 1,150 | 1,750 | 2.63 | 35.76 | 1,270,000 | |

## CLEAR CREEK NEAR SHASTA, CAL.

LOCATION.—In the SE. ¼ sec. 17, T. 32 N., R. 6 W., at suspension footbridge at Whiskeytown, about 5 miles northwest of Shasta, 7½ miles above junction with Sacramento River. Brandy and Whiskey creeks enter about 1,000 feet below the station.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in three sections on right bank 30 feet below bridge.

CHANNEL.—Solid rock and bowlders; permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Several small ditches divert water above the station.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Clear Creek near Shasta, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 10 | G. H. Canfield | 3.58 | 104 | May 26 | G. H. Canfield | 3.79 | 159 |
| 15 | do | 6.00 | 1,300 | Sept. 19 | Lasley Lee | 3.00 | 13 |
| 15 | do | 5.75 | 1,150 | | | | |

*Daily gage height, in feet, of Clear Creek near Shasta, Cal., for the year ending Sept. 30, 1913.*

[J. P. W. Davis, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.25 | 3.32 | 3.5 | 3.65 | 4.55 | 3.85 | 4.35 | 4.2 | 3.65 | 3.35 | 3.15 | 3.02 |
| 2 | 3.25 | 3.32 | 3.5 | 3.65 | 4.55 | 3.9 | 4.3 | 4.2 | 3.65 | 3.3 | 3.15 | 3.1 |
| 3 | 3.22 | 3.38 | 3.5 | 3.62 | 4.5 | 3.9 | 4.3 | 4.2 | 3.6 | 3.3 | 3.1 | 3.1 |
| 4 | 3.22 | 3.35 | 3.48 | 3.62 | 4.4 | 3.9 | 4.4 | 4.15 | 3.6 | 3.3 | 3.1 | 3.15 |
| 5 | 3.2 | 3.6 | 3.48 | 3.52 | 4.3 | 3.95 | 5.3 | 4.1 | 3.55 | 3.25 | 3.1 | 3.15 |
| 6 | 3.2 | 5.3 | 3.45 | 3.52 | 4.25 | 3.95 | 5.1 | 4.1 | 3.5 | 3.25 | 3.1 | 3.1 |
| 7 | 3.2 | 4.2 | 3.45 | 3.6 | 4.25 | 3.9 | 4.9 | 4.05 | 3.5 | 3.25 | 3.1 | 3.1 |
| 8 | 3.2 | 3.8 | 3.45 | 3.7 | 4.2 | 3.9 | 4.1 | 4.05 | 3.5 | 3.3 | 3.05 | 3.15 |
| 9 | 3.2 | 5.8 | 3.42 | 3.7 | 4.3 | 3.9 | 4.6 | 4.25 | 3.55 | 3.3 | 3.05 | 3.1 |
| 10 | 3.2 | 4.4 | 3.42 | 3.55 | 4.3 | 3.95 | 4.55 | 4.3 | 3.55 | 3.25 | 3.05 | 3.05 |
| 11 | 3.2 | 4.0 | 3.42 | 3.6 | 4.35 | 3.95 | 4.55 | 4.3 | 3.5 | 3.2 | 3.05 | 3.02 |
| 12 | 3.2 | 3.9 | 3.42 | 3.8 | 4.35 | 3.95 | 4.5 | 4.35 | 3.45 | 3.2 | 3.05 | 3.0 |
| 13 | 3.2 | 3.8 | 3.42 | 4.4 | 4.3 | 3.9 | 4.65 | 4.1 | 3.45 | 3.18 | 3.05 | 3.0 |
| 14 | 3.18 | 4.0 | 3.42 | 4.8 | 4.3 | 3.9 | 4.65 | 4.05 | 3.45 | 3.2 | 3.1 | 3.0 |
| 15 | 3.18 | 3.9 | 4.15 | 6.1 | 4.35 | 3.9 | 4.7 | 4.0 | 3.4 | 3.2 | 3.1 | 3.05 |
| 16 | 3.18 | 3.88 | 4.25 | 5.0 | 4.4 | 3.9 | 4.5 | 4.0 | 3.4 | 3.15 | 3.1 | 3.0 |
| 17 | 3.18 | 3.8 | 4.2 | 4.55 | 4.4 | 3.95 | 4.6 | 3.9 | 3.4 | 3.15 | 3.1 | 3.0 |
| 18 | 3.2 | 3.72 | 4.2 | 6.6 | 4.4 | 4.2 | 4.7 | 4.0 | 3.35 | 3.15 | 3.1 | 3.0 |
| 19 | 3.2 | 3.7 | 4.2 | 5.5 | 4.3 | 4.25 | 4.7 | 4.0 | 3.4 | 3.15 | 3.1 | 2.95 |
| 20 | 3.2 | 3.7 | 4.2 | 4.9 | 4.25 | 4.25 | 4.6 | 3.9 | 3.4 | 3.15 | 3.05 | 3.0 |
| 21 | 3.22 | 3.68 | 4.2 | 4.6 | 4.15 | 4.3 | 4.6 | 3.9 | 3.35 | 3.1 | 3.05 | 3.0 |
| 22 | 3.25 | 3.62 | 4.2 | 4.4 | 4.1 | 4.2 | 4.5 | 3.8 | 3.45 | 3.1 | 3.05 | 3.0 |
| 23 | 3.4 | 3.6 | 4.2 | 4.25 | 4.05 | 4.1 | 4.4 | 3.8 | 3.45 | 3.1 | 3.05 | 3.05 |
| 24 | 3.35 | 3.58 | 3.7 | 4.1 | 4.1 | 4.05 | 4.3 | 3.8 | 3.4 | 3.15 | 3.05 | 3.0 |
| 25 | 3.4 | 3.55 | 3.6 | 4.2 | 4.0 | 4.05 | 4.25 | 3.8 | 3.4 | 3.15 | 3.05 | 3.0 |
| 26 | 3.4 | 3.52 | 3.5 | 4.3 | 4.0 | 4.0 | 4.25 | 3.75 | 3.4 | 3.15 | 3.05 | 3.1 |
| 27 | 3.4 | 3.52 | 3.45 | 4.35 | 3.9 | 4.0 | 4.3 | 3.75 | 3.45 | 3.15 | 3.0 | 3.1 |
| 28 | 3.35 | 3.52 | 3.6 | 4.5 | 3.9 | 4.0 | 4.3 | 3.8 | 3.45 | 3.15 | 3.0 | 3.1 |
| 29 | 3.32 | 3.5 | 3.6 | 4.5 | ..... | 4.05 | 4.3 | 3.75 | 3.4 | 3.15 | 3.0 | 3.1 |
| 30 | 3.38 | 3.5 | 3.65 | 4.5 | ..... | 4.2 | 4.2 | 3.75 | 3.35 | 3.2 | 3.0 | 3.1 |
| 31 | 3.35 | ..... | 3.65 | 4.5 | ..... | 4.2 | ..... | 3.72 | ..... | 3.2 | 3.0 | ..... |

*Daily discharge, in second-feet, of Clear Creek near Shasta, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | 58 | 92 | 128 | 459 | 186 | 371 | 310 | 128 | 64 | 34 | 20 |
| 2 | 48 | 58 | 92 | 128 | 459 | 202 | 350 | 310 | 128 | 55 | 34 | 28 |
| 3 | 43 | 69 | 92 | 120 | 436 | 202 | 350 | 310 | 115 | 55 | 28 | 28 |
| 4 | 43 | 64 | 88 | 120 | 392 | 202 | 392 | 291 | 115 | 55 | 28 | 34 |
| 5 | 40 | 115 | 88 | 97 | 350 | 219 | 870 | 272 | 104 | 48 | 28 | 34 |
| 6 | 40 | 870 | 82 | 97 | 330 | 219 | 750 | 272 | 92 | 48 | 28 | 28 |
| 7 | 40 | 310 | 82 | 115 | 330 | 202 | 635 | 254 | 92 | 48 | 28 | 28 |
| 8 | 40 | 170 | 82 | 141 | 310 | 202 | 530 | 254 | 92 | 55 | 23 | 34 |
| 9 | 40 | 170 | 76 | 141 | 350 | 202 | 482 | 330 | 104 | 55 | 23 | 28 |
| 10 | 40 | 392 | 76 | 104 | 350 | 219 | 459 | 350 | 104 | 48 | 23 | 23 |
| 11 | 40 | 236 | 76 | 115 | 371 | 219 | 459 | 350 | 92 | 40 | 23 | 20 |
| 12 | 40 | 202 | 76 | 170 | 371 | 219 | 436 | 371 | 82 | 40 | 23 | 18 |
| 13 | 40 | 170 | 76 | 392 | 350 | 202 | 506 | 272 | 82 | 38 | 23 | 18 |
| 14 | 38 | 236 | 76 | 580 | 350 | 202 | 506 | 254 | 82 | 40 | 28 | 18 |
| 15 | 38 | 202 | 291 | 1,380 | 371 | 202 | 530 | 236 | 72 | 40 | 28 | 23 |
| 16 | 38 | 196 | 330 | 690 | 392 | 202 | 436 | 236 | 72 | 34 | 28 | 18 |
| 17 | 38 | 170 | 310 | 459 | 392 | 219 | 482 | 202 | 72 | 34 | 28 | 18 |
| 18 | 40 | 147 | 310 | 1,730 | 392 | 310 | 530 | 236 | 64 | 34 | 28 | 18 |
| 19 | 40 | 141 | 310 | 990 | 350 | 330 | 530 | 236 | 72 | 34 | 28 | 14 |
| 20 | 40 | 141 | 310 | 635 | 330 | 330 | 482 | 202 | 72 | 34 | 23 | 18 |
| 21 | 43 | 136 | 310 | 482 | 291 | 350 | 482 | 202 | 64 | 28 | 23 | 18 |
| 22 | 48 | 120 | 310 | 392 | 272 | 310 | 436 | 170 | 82 | 28 | 23 | 18 |
| 23 | 72 | 115 | 310 | 330 | 254 | 272 | 392 | 170 | 82 | 28 | 23 | 23 |
| 24 | 64 | 110 | 141 | 272 | 272 | 254 | 350 | 170 | 72 | 34 | 23 | 18 |
| 25 | 72 | 104 | 115 | 310 | 236 | 254 | 330 | 170 | 72 | 34 | 23 | 18 |
| 26 | 72 | 97 | 92 | 350 | 236 | 236 | 330 | 156 | 72 | 34 | 23 | 28 |
| 27 | 72 | 97 | 82 | 371 | 202 | 236 | 350 | 156 | 82 | 34 | 18 | 28 |
| 28 | 64 | 97 | 115 | 436 | 202 | 236 | 350 | 170 | 82 | 34 | 18 | 28 |
| 29 | 58 | 92 | 115 | 436 | ..... | 254 | 350 | 156 | 72 | 34 | 18 | 28 |
| 30 | 69 | 92 | 128 | 436 | ..... | 310 | 310 | 156 | 64 | 40 | 18 | 28 |
| 31 | 64 | ..... | 128 | 436 | ..... | 310 | ..... | 147 | ..... | 40 | 18 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Clear Creek near Shasta, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 72 | 38 | 48.8 | 3,000 | B. |
| November | 870 | 58 | 173 | 10,300 | B. |
| December | 330 | 76 | 157 | 9,650 | B. |
| January | 1,730 | 97 | 406 | 25,000 | A. |
| February | 459 | 202 | 336 | 18,700 | A. |
| March | 350 | 186 | 242 | 14,900 | A. |
| April | 870 | 310 | 459 | 27,300 | A. |
| May | 371 | 147 | 238 | 14,600 | A. |
| June | 128 | 64 | 86.0 | 5,120 | B. |
| July | 64 | 28 | 40.9 | 2,510 | B. |
| August | 34 | 18 | 24.7 | 1,520 | C. |
| September | 34 | 14 | 23.4 | 1,390 | C. |
| The year | 1,730 | 14 | 185 | 134,000 | |

## COW CREEK AND TRIBUTARIES.

### COW CREEK AT MILLVILLE, CAL.

LOCATION.—In the NW. ¼ sec. 14, T. 31 N., R. 3 W. at highway bridge at Millville. Clover Creek enters three-fourths mile below the station.

RECORDS AVAILABLE.—August 10, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on large oak tree on right bank, 6 feet below bridge.

CHANNEL.—Gravel and small bowlders; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Several small ditches divert water for irrigation above the station.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of Cow Creek at Millville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 26 | Lasley Lee | 1.00 | 87 | Mar. 25 | G. H. Canfield | 1.57 | 169 |
| Jan. 18 | G. H. Canfield | 5.34 | 2,180 | Apr. 15 | do | 2.17 | 373 |
| 20 | do | 2.04 | 352 | 16 | do | 1.98 | 300 |
| Mar. 1 | do | 1.23 | 94 | May 22 | do | 1.98 | 311 |
| 16 | do | 1.30 | 105 | Sept. 11 | Lasley Lee | .85 | 41 |

*Daily gage height, in feet, of Cow Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

[Mrs. M. D. Rathbun and J. R. Douease, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.80 | 0.90 | 1.00 | 1.10 | 1.70 | 1.25 | 1.80 | 2.00 | 1.55 | 1.25 | 0.90 | 0.85 |
| 2 | .78 | .95 | 1.00 | 1.12 | 1.60 | 1.30 | 1.98 | 1.90 | 1.50 | 1.20 | .90 | .88 |
| 3 | .78 | .98 | 1.00 | 1.12 | 1.55 | 1.35 | 1.78 | 1.90 | 1.55 | 1.22 | .90 | .90 |
| 4 | .75 | .98 | 1.00 | 1.12 | 1.50 | 1.30 | 3.1 | 1.90 | 1.50 | 1.30 | .90 | .90 |
| 5 | .80 | 1.00 | 1.00 | 1.00 | 1.50 | 1.30 | 4.3 | 2.0 | 1.50 | 1.30 | .90 | .90 |
| 6 | .80 | 5.60 | 1.00 | 1.00 | 1.58 | 1.30 | 2.3 | 2.2 | 1.52 | 1.10 | .90 | .90 |
| 7 | .80 | 2.35 | 1.00 | 1.10 | 1.48 | 1.30 | 2.2 | 2.1 | 1.40 | 1.10 | .90 | .88 |
| 8 | .78 | 1.80 | 1.00 | 1.10 | 1.45 | 1.30 | 2.0 | 2.7 | 1.40 | 1.08 | .90 | .88 |
| 9 | .75 | 1.40 | 1.00 | 1.10 | 1.45 | 1.35 | 1.95 | 2.5 | 1.42 | 1.10 | .85 | .85 |
| 10 | .75 | 1.98 | 1.00 | 1.10 | 1.40 | 1.40 | 1.90 | 2.6 | 1.40 | 1.08 | .85 | .85 |
| 11 | .80 | 1.65 | 1.00 | 1.12 | 1.40 | 1.45 | 1.90 | 2.7 | 1.32 | 1.10 | .82 | .85 |
| 12 | .80 | 1.45 | 1.00 | 1.20 | 1.40 | 1.40 | 1.90 | 2.4 | 1.30 | 1.12 | .82 | .85 |
| 13 | .80 | 1.30 | 1.00 | 4.0 | 1.38 | 1.40 | 2.05 | 2.3 | 1.25 | 1.00 | .82 | .85 |
| 14 | .75 | 1.32 | 1.30 | 6.7 | 1.38 | 1.38 | 2.0 | 2.15 | 1.20 | 1.00 | .88 | .85 |
| 15 | .80 | 1.35 | 1.50 | 4.6 | 1.38 | 1.35 | 3.0 | 2.2 | 1.20 | 1.00 | .85 | .85 |
| 16 | .80 | 1.30 | 3.4 | 3.5 | 1.38 | 1.30 | 2.0 | 2.15 | 1.18 | .90 | .88 | .85 |
| 17 | .75 | 1.20 | 2.5 | 3.0 | 1.38 | 1.40 | 1.90 | 2.2 | 1.10 | .90 | .85 | .85 |
| 18 | .80 | 1.18 | 1.50 | 5.4 | 1.38 | 2.50 | 2.7 | 2.2 | 1.15 | .90 | .85 | .85 |
| 19 | .78 | 1.25 | 1.45 | 2.8 | 1.40 | 1.78 | 2.1 | 2.2 | 1.20 | .90 | .82 | .85 |
| 20 | .80 | 1.38 | 1.35 | 2.05 | 1.38 | 1.58 | 2.1 | 2.2 | 1.22 | .90 | .85 | .85 |
| 21 | .75 | 1.08 | 1.30 | 1.88 | 1.35 | 1.55 | 2.1 | 2.05 | 1.15 | .90 | .82 | .85 |
| 22 | .82 | 1.05 | 1.25 | 1.85 | 1.30 | 2.45 | 2.2 | 2.0 | 1.12 | .90 | .85 | .85 |
| 23 | 1.38 | 1.02 | 1.20 | 1.70 | 1.30 | 1.90 | 2.0 | 2.0 | 1.22 | .90 | .82 | .82 |
| 24 | .90 | 1.00 | 1.20 | 1.60 | 1.50 | 1.70 | 2.1 | 1.90 | 1.30 | 1.10 | .82 | .80 |
| 25 | .98 | 1.08 | 1.18 | 1.60 | 1.45 | 1.60 | 2.2 | 1.90 | 1.31 | 1.10 | .80 | .80 |
| 26 | 1.10 | 1.00 | 1.12 | 1.70 | 1.40 | 1.50 | 2.5 | 1.90 | 1.95 | 1.02 | .82 | .85 |
| 27 | 1.00 | 1.02 | 1.12 | 1.70 | 1.30 | 1.50 | 2.4 | 1.80 | 1.60 | 1.02 | .82 | .85 |
| 28 | 1.00 | 1.00 | 1.12 | 1.70 | 1.30 | 1.50 | 2.2 | 1.80 | 1.50 | 1.00 | .82 | .85 |
| 29 | 1.20 | 1.00 | 1.00 | 1.65 | ..... | 1.58 | 2.0 | 1.70 | 1.35 | 1.10 | .95 | .88 |
| 30 | 1.00 | 1.00 | 1.20 | 1.70 | ..... | 1.60 | 2.0 | 1.70 | 1.30 | 1.00 | .90 | .88 |
| 31 | .98 | ..... | 1.20 | 1.70 | ..... | 1.75 | ..... | 1.60 | ..... | .90 | .95 | ..... |

*Daily discharge, in second-feet, of Cow Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | 86 | 101 | 117 | 209 | 96 | 241 | 311 | 166 | 96 | 47 | 42 |
| 2 | 69 | 94 | 101 | 121 | 179 | 106 | 304 | 275 | 152 | 87 | 47 | 45 |
| 3 | 69 | 98 | 101 | 121 | 166 | 117 | 235 | 275 | 166 | 91 | 47 | 47 |
| 4 | 66 | 98 | 101 | 121 | 152 | 106 | 800 | 275 | 152 | 106 | 47 | 47 |
| 5 | 72 | 101 | 101 | 101 | 152 | 106 | 1,470 | 311 | 152 | 106 | 47 | 47 |
| 6 | 72 | 2,300 | 101 | 101 | 174 | 106 | 427 | 387 | 157 | 71 | 47 | 47 |
| 7 | 72 | 474 | 101 | 117 | 147 | 106 | 387 | 349 | 128 | 71 | 47 | 45 |
| 8 | 69 | 281 | 101 | 117 | 140 | 106 | 311 | 600 | 128 | 68 | 47 | 45 |
| 9 | 66 | 177 | 101 | 117 | 140 | 117 | 293 | 510 | 133 | 71 | 42 | 42 |
| 10 | 66 | 338 | 101 | 117 | 128 | 128 | 275 | 555 | 128 | 68 | 42 | 42 |
| 11 | 72 | 238 | 101 | 121 | 128 | 140 | 275 | 600 | 110 | 71 | 40 | 42 |
| 12 | 72 | 188 | 101 | 135 | 128 | 128 | 275 | 467 | 106 | 74 | 40 | 42 |
| 13 | 72 | 155 | 101 | 1,290 | 124 | 128 | 330 | 427 | 96 | 58 | 40 | 42 |
| 14 | 66 | 159 | 155 | 3,060 | 124 | 124 | 311 | 368 | 87 | 58 | 45 | 42 |
| 15 | 72 | 166 | 200 | 1,650 | 124 | 117 | 750 | 387 | 87 | 58 | 42 | 42 |
| 16 | 72 | 155 | 956 | 1,010 | 124 | 106 | 311 | 368 | 84 | 47 | 45 | 42 |
| 17 | 66 | 135 | 535 | 750 | 124 | 128 | 275 | 387 | 71 | 47 | 42 | 42 |
| 18 | 72 | 131 | 200 | 2,170 | 124 | 510 | 600 | 387 | 79 | 47 | 42 | 42 |
| 19 | 69 | 145 | 188 | 650 | 128 | 235 | 349 | 387 | 87 | 47 | 40 | 42 |
| 20 | 72 | 173 | 166 | 330 | 124 | 174 | 349 | 387 | 91 | 47 | 42 | 42 |
| 21 | 66 | 114 | 155 | 268 | 117 | 166 | 349 | 330 | 79 | 47 | 40 | 42 |
| 22 | 75 | 109 | 145 | 258 | 106 | 488 | 387 | 311 | 74 | 47 | 42 | 42 |
| 23 | 173 | 104 | 135 | 209 | 106 | 275 | 311 | 311 | 91 | 47 | 40 | 40 |
| 24 | 86 | 101 | 135 | 179 | 152 | 209 | 349 | 275 | 106 | 71 | 40 | 38 |
| 25 | 98 | 114 | 131 | 179 | 140 | 179 | 387 | 275 | 108 | 71 | 38 | 38 |
| 26 | 117 | 101 | 121 | 209 | 128 | 152 | 510 | 275 | 293 | 61 | 40 | 42 |
| 27 | 101 | 104 | 121 | 209 | 106 | 152 | 467 | 241 | 179 | 61 | 40 | 42 |
| 28 | 101 | 101 | 121 | 209 | 106 | 152 | 387 | 241 | 152 | 58 | 40 | 42 |
| 29 | 135 | 101 | 101 | 194 | ..... | 174 | 311 | 209 | 117 | 71 | 52 | 45 |
| 30 | 101 | 101 | 135 | 209 | ..... | 179 | 311 | 209 | 106 | 58 | 47 | 45 |
| 31 | 98 | ..... | 135 | 209 | ..... | 225 | ..... | 179 | ..... | 47 | 52 | ..... |

NOTE.—Discharge determined from two well-defined rating curves—one applicable Oct. 1 to Jan. 14 and the other Jan. 15 to Sept. 30.

*Monthly discharge of Cow Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 173 | 66 | 82.2 | 5,050 | B. |
| November | 2,300 | 86 | 225 | 13,400 | A. |
| December | 956 | 101 | 166 | 10,200 | B. |
| January | 3,060 | 101 | 473 | 29,100 | C. |
| February | 209 | 106 | 136 | 7,550 | A. |
| March | 510 | 96 | 169 | 10,400 | A. |
| April | 1,470 | 235 | 411 | 24,500 | A. |
| May | 600 | 179 | 351 | 21,600 | A. |
| June | 293 | 71 | 122 | 7,260 | A. |
| July | 106 | 47 | 65.4 | 4,020 | A. |
| August | 52 | 38 | 43.5 | 2,670 | B. |
| September | 47 | 38 | 42.8 | 2,550 | B. |
| The year | 3,060 | 38 | 191 | 138,000 | |

NOTE.—Maximum discharge for the year occurred during the night of Jan. 14; gage height, 9.2 feet; estimated discharge, 5,600 second-feet.

### CLOVER CREEK AT MILLVILLE, CAL.

LOCATION.—In the SE. ¼ sec. 10, T. 31 N., R. 3 W., at highway bridge at Millville, one-fourth mile above junction with Cow Creek.

RECORDS AVAILABLE.—August 10, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream end of bridge pier near left bank.

CHANNEL.—Sand and gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Water diverted for irrigation above station.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of Clover Creek at Millville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 27 | Lasley Lee | 2.14 | 12 | Mar. 3 | G. H. Canfield | 2.49 | 40 |
| Jan. 18 | G. H. Canfield | 4.71 | 728 | 13 | do | 2.37 | 29 |
| 18 | do | 4.92 | 886 | 21 | do | 2.56 | 50 |
| 19 | do | 3.49 | 223 | Sept. 11 | Lasley Lee | 1.88 | 3.9 |

*Daily gage height, in feet, of Clover Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

[H. H. Butzbach, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.95 | 2.20 | 2.52 | 2.55 | 2.80 | 2 40 | 2.60 | 2.65 | 2.35 | 2.18 | 2.00 |
| 2 | 1.92 | 2.12 | 2.50 | 2.45 | 2.75 | 2.45 | 2.65 | 2.60 | 2.38 | 2.20 | 2.00 |
| 2 | 1.92 | 2.18 | 2.50 | 2.40 | 2.70 | 2.50 | 2.60 | 2.60 | 2.38 | 2.15 | 2.00 |
| 4 | 1.92 | 2.32 | 2.50 | 2.38 | 2.70 | 2.48 | 3.80 | 2.60 | 2.35 | 2.20 | 2.00 |
| 5 | 1.95 | 2.22 | 2.50 | 2.35 | 2.70 | 2.40 | 3.40 | 2.60 | 2.30 | 2.15 | 2.00 |
| 6 | 1.95 | 6.00 | 2.50 | 2.25 | 2.65 | 2.40 | 2.90 | 2.60 | 2.60 | 2.10 | 2.00 |
| 7 | 1.92 | 3.55 | 2.50 | 2.35 | 2.60 | 2.40 | 2.80 | 2.60 | 2.30 | 2.10 | 1.90 |
| 8 | 1.95 | 3.00 | 2.50 | 2.30 | 2.60 | 2.40 | 2.80 | 2.60 | 2.30 | 2.05 | 1.88 |
| 9 | 1.95 | 2.88 | 2.50 | 2.38 | 2.58 | 2.40 | 2.70 | 2.75 | 2.30 | 2.02 | 1.85 |
| 10 | 1.95 | 3.10 | 2.48 | 2.45 | 2.55 | 2.40 | 2.68 | 2.70 | 2.30 | 2.02 | 1.88 |
| 11 | 1.92 | 3.60 | 2.48 | 2.50 | 2.52 | 2.40 | 2.70 | 2.78 | 2.28 | 2.02 | ..... |
| 12 | 1.95 | 2.90 | 2.48 | 2.40 | 2.50 | 2.40 | 2.68 | 2.70 | 2.25 | 2.00 | ..... |
| 13 | 2.00 | 2.78 | 2.50 | 4.30 | 2.50 | 2.40 | 2.65 | 2.82 | 2.25 | 2.00 | ..... |
| 14 | 2.00 | 3.30 | 2.95 | 5.40 | 2.50 | 2.35 | 2.65 | 2.70 | 2.22 | 2.00 | ..... |
| 15 | 1.92 | 2.92 | 3.35 | 4.85 | 2.50 | 2.35 | 3.30 | 2.70 | 2.25 | 2.00 | ..... |
| 16 | 1.92 | 2.78 | 5.00 | 4.25 | 2.50 | 2.30 | 2.72 | 2.65 | 2.20 | 2.00 | ..... |
| 17 | 1.92 | 2.70 | 3.90 | 3.80 | 2.50 | 2.30 | 2.65 | 2.60 | 2.20 | 2.00 | ..... |
| 18 | 1.92 | 2.65 | 2.90 | 5.10 | 2.45 | 3.10 | 3.20 | 2.60 | 2.15 | 2.00 | ..... |
| 19 | 1.92 | 2.60 | 2.80 | 3.70 | 2.45 | 2.85 | 2.80 | 2.68 | 2.15 | 2.00 | ..... |
| 20 | 1.90 | 2.85 | 2.60 | 3.25 | 2.45 | 2.60 | 2.75 | 2.65 | 2.15 | 2.00 | ..... |
| 21 | 1.98 | 2.68 | 2.55 | 3.00 | 2.42 | 2.60 | 2.70 | 2.60 | 2.10 | 2.00 | ..... |
| 22 | 2.00 | 2.62 | 2.50 | 3.00 | 2.40 | 3.80 | 2.70 | 2.60 | 2.10 | 1.95 | ..... |
| 23 | 2.40 | 2.60 | 2.45 | 2.88 | 2.40 | 2.90 | 2.65 | 2.50 | 2.20 | 2.00 | ..... |
| 24 | 2.10 | 2.60 | 2.42 | 2.78 | 2.53 | 2.80 | 2.70 | 2.52 | 2.20 | 2.05 | ..... |
| 25 | 2.20 | 2.58 | 2.40 | 2.88 | 2.50 | 2.70 | 2.70 | 2.50 | 2.22 | 2.02 | ..... |
| 26 | 2.38 | 2.55 | 2.38 | 2.88 | 2.50 | 2.60 | 2.72 | 2.50 | 2.35 | 2.02 | ..... |
| 27 | 2.15 | 2.55 | 2.40 | 2.88 | 2.40 | 2.60 | 2.75 | 2.50 | 2.38 | 2.02 | ..... |
| 28 | 2.18 | 2.55 | 2.38 | 2.85 | 2.40 | 2.60 | 2.70 | 2.50 | 2.30 | 2.02 | ..... |
| 29 | 2.18 | 2.52 | 2.35 | 2.80 | ..... | 2.80 | 2.70 | 2.45 | 2.20 | 2.00 | ..... |
| 30 | 2.20 | 2.52 | 2.95 | 2.80 | ..... | 2.70 | 2.68 | 2.40 | 2.20 | 2.00 | ..... |
| 31 | 2.15 | ..... | 2.50 | 2.80 | ..... | 2.65 | ..... | 2.35 | ..... | 2.00 | ..... |

*Daily discharge, in second-feet, of Clover Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 17 | 44 | 48 | 82 | 32 | 54 | 61 | 28 | 16 | 7.5 |
| 2 | 5.5 | 12 | 42 | 37 | 75 | 37 | 61 | 54 | 30 | 17 | 7.5 |
| 3 | 5.5 | 16 | 42 | 32 | 68 | 42 | 54 | 54 | 30 | 14 | 7.5 |
| 4 | 5.5 | 26 | 42 | 30 | 68 | 40 | 313 | 54 | 28 | 17 | 7.5 |
| 5 | 6 | 18 | 42 | 28 | 68 | 32 | 196 | 54 | 24 | 14 | 7.5 |
| 6 | 6 | 1,590 | 42 | 20 | 61 | 32 | 98 | 54 | 54 | 11 | 7.5 |
| 7 | 5.5 | 235 | 42 | 28 | 54 | 32 | 82 | 54 | 24 | 11 | 5 |
| 8 | 6 | 114 | 42 | 24 | 54 | 32 | 82 | 54 | 24 | 9 | 4.5 |
| 9 | 6 | 95 | 42 | 30 | 52 | 32 | 68 | 75 | 24 | 8 | 4 |
| 10 | 6 | 132 | 40 | 37 | 48 | 32 | 65 | 68 | 24 | 8 | 4.5 |
| 11 | 5.5 | 249 | 40 | 42 | 44 | 32 | 68 | 79 | 23 | 8 | ..... |
| 12 | 6 | 98 | 40 | 32 | 42 | 32 | 65 | 68 | 20 | 7.5 | ..... |
| 13 | 7.5 | 79 | 42 | 520 | 42 | 32 | 61 | 85 | 20 | 7.5 | ..... |
| 14 | 7.5 | 173 | 106 | 1,160 | 42 | 28 | 61 | 68 | 18 | 7.5 | ..... |
| 15 | 5.5 | 101 | 184 | 820 | 42 | 28 | 173 | 68 | 20 | 7.5 | ..... |
| 16 | 5.5 | 79 | 910 | 496 | 42 | 24 | 71 | 61 | 17 | 7.5 | ..... |
| 17 | 5.5 | 68 | 348 | 313 | 42 | 24 | 61 | 54 | 17 | 7.5 | ..... |
| 18 | 5.5 | 61 | 98 | 970 | 37 | 132 | 152 | 54 | 14 | 7.5 | ..... |
| 19 | 5.5 | 54 | 82 | 280 | 37 | 90 | 82 | 65 | 14 | 7.5 | ..... |
| 20 | 5 | 90 | 54 | 162 | 37 | 54 | 75 | 61 | 14 | 7.5 | ..... |
| 21 | 7 | 65 | 48 | 114 | 34 | 54 | 68 | 54 | 11 | 7.5 | ..... |
| 22 | 7.5 | 57 | 42 | 114 | 32 | 313 | 68 | 54 | 11 | 6 | ..... |
| 23 | 32 | 54 | 37 | 95 | 32 | 98 | 61 | 42 | 17 | 7.5 | ..... |
| 24 | 11 | 54 | 34 | 79 | 52 | 82 | 68 | 44 | 17 | 9 | ..... |
| 25 | 17 | 52 | 32 | 95 | 42 | 68 | 68 | 42 | 18 | 8 | ..... |
| 26 | 30 | 48 | 30 | 95 | 42 | 54 | 71 | 42 | 28 | 8 | ..... |
| 27 | 14 | 48 | 32 | 95 | 32 | 54 | 75 | 42 | 30 | 8 | ..... |
| 28 | 16 | 48 | 30 | 90 | 32 | 54 | 68 | 42 | 24 | 8 | ..... |
| 29 | 16 | 44 | 28 | 82 | ..... | 82 | 68 | 37 | 17 | 7.5 | ..... |
| 30 | 17 | 44 | 106 | 82 | ..... | 68 | 65 | 32 | 17 | 7.5 | ..... |
| 31 | 14 | ..... | 42 | 82 | ..... | 61 | ..... | 28 | ..... | 7.5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Mean discharge for August, 4.9 second-feet; for September, 4.7 second-feet; estimated by comparison with Cow and Bear creeks near Millville.

*Monthly discharge of Clover Creek at Millville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 32 | 5.5 | 9.63 | 592 | C. |
| November | 1,590 | 12 | 127 | 7,560 | B. |
| December | 910 | 28 | 89.8 | 5,520 | A. |
| January | 1,160 | 20 | 198 | 12,200 | A. |
| February | 82 | 32 | 47.7 | 2,650 | B. |
| March | 313 | 24 | 58.3 | 3,580 | A. |
| April | 313 | 54 | 87.4 | 5,200 | A. |
| May | 85 | 28 | 55.0 | 3,380 | A. |
| June | 54 | 11 | 21.9 | 1,300 | B. |
| July | 17 | 6 | 9.19 | 565 | C. |
| August | 7.5 | ..... | [a] 4.9 | 301 | D. |
| September | ..... | ..... | [a] 4.7 | 280 | D. |
| The year | 1,590 | ..... | 59.6 | 43,100 | |

[a] Estimated by comparison with Cow and Bear creeks near Millville.

### LITTLE COW CREEK AT PALO CEDRO, CAL.

LOCATION.—In the SE. ¼ sec. 5, T. 31 N., R. 3 W., at highway bridge one-fourth mile east of Palo Cedro, and one-fourth mile above junction with Cow Creek.

RECORDS AVAILABLE.—August 9, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on bridge pier near right bank.

CHANNEL.—Gravel and small bowlders; shifts at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading above gage.

DIVERSIONS.—A small quantity of water is pumped from this creek for irrigation. The Terry Lumber Co.'s flume, which is supplied by a diversion from Montgomery Creek, discharges into this stream. From June to December this amounts to 8 or 10 second-feet; for rest of year, about 6 second-feet.

ACCURACY.—Rating curve fairly well defined; results fair.

*Discharge measurements of Little Cow Creek at Palo Cedro, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 27 | G. H. Canfield | 3.07 | 315 | Apr. 14 | G. H. Canfield | 2.66 | 228 |
| Mar. 1 | do | 2.00 | 103 | Sept. 18 | Lasley Lee | .84 | 5 |
| 13 | do | 1.92 | 91 | | | | |

*Daily gage height, in feet, of Little Cow Creek at Palo Cedro, Cal., for the year ending Sept. 30, 1913.*

[Richmond Logan, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.50 | 1.85 | 1.85 | 2.6 | 2.8 | 2.0 | 2.5 | 2.3 | 1.65 | 1.4 | 1.0 | 0.9 |
| 2 | 1.48 | 1.85 | 1.7 | 2.1 | 2.8 | 2.1 | 2.5 | 2.1 | 1.6 | 1.4 | 1.0 | .9 |
| 3 | 1.50 | 1.85 | 1.75 | 2.0 | 2.6 | 2.1 | 2.5 | 2.1 | 1.55 | 1.4 | .9 | .9 |
| 4 | 1.50 | 2.1 | 1.7 | 2.1 | 2.4 | 2.1 | 3.9 | 2.0 | 1.5 | 1.4 | .8 | .9 |
| 5 | 1.50 | 2.1 | 1.7 | 1.9 | 2.4 | 2.0 | 3.6 | 2.0 | 1.5 | 1.4 | .8 | 1.0 |
| 6 | 1.50 | 10.0 | 1.7 | 2.6 | 2.4 | 2.0 | 3.5 | 2.1 | 1.5 | 1.35 | .9 | 1.0 |
| 7 | 1.55 | 4.4 | 1.7 | 1.9 | 2.4 | 2.0 | 3.0 | 2.2 | 1.5 | 1.3 | .9 | 1.0 |
| 8 | 1.55 | 3.0 | 1.6 | 1.9 | 2.4 | 2.0 | 2.8 | 2.2 | 1.5 | 1.2 | .8 | .9 |
| 9 | 1.55 | 2.95 | 1.7 | 1.9 | 2.3 | 2.0 | 2.7 | 2.7 | 1.5 | 1.2 | .8 | .9 |
| 10 | 1.55 | 3.5 | 1.7 | 1.9 | 2.25 | 2.0 | 2.7 | 2.4 | 1.5 | 1.2 | .8 | .9 |
| 11 | 1.58 | 3.0 | 1.6 | 1.9 | 2.3 | 2.0 | 2.5 | 2.35 | 1.4 | 1.1 | .9 | .9 |
| 12 | 1.55 | 2.7 | 1.7 | 1.9 | 2.2 | 2.0 | 2.5 | 2.3 | 1.4 | 1.1 | .9 | .9 |
| 13 | 1.55 | 2.5 | 1.7 | 5.0 | 2.1 | 2.0 | 2.6 | 2.2 | 1.4 | 1.1 | .9 | .9 |
| 14 | 1.58 | 3.5 | 1.7 | 7.7 | 2.1 | 2.0 | 2.5 | 2.15 | 1.4 | 1.05 | .9 | .9 |
| 15 | 1.60 | 3.5 | 4.0 | 7.0 | 2.1 | 1.95 | 3.0 | 2.0 | 1.4 | 1.0 | .9 | .9 |
| 16 | 1.58 | 2.7 | 7.4 | 6.0 | 2.2 | 1.9 | 2.5 | 2.0 | 1.3 | 1.0 | .9 | .9 |
| 17 | 1.55 | 2.5 | 5.0 | 5.5 | 2.1 | 2.0 | 2.5 | 2.0 | 1.3 | .9 | .9 | .9 |
| 18 | 1.55 | 2.5 | 4.5 | 9.0 | 2.1 | 3.25 | 2.9 | 2.0 | 1.3 | .9 | .9 | .9 |
| 19 | 1.50 | 2.1 | 3.0 | 5.0 | 2.05 | 3.2 | 2.6 | 2.1 | 1.25 | .8 | .8 | ..... |
| 20 | 1.55 | 2.5 | 2.6 | 4.5 | 2.05 | 2.8 | 2.5 | 2.0 | 1.3 | .8 | .9 | ..... |
| 21 | 1.55 | 2.1 | 2.5 | 3.5 | 2.0 | 4.0 | 2.5 | 2.0 | 1.3 | .8 | .9 | .9 |
| 22 | 1.55 | 2.0 | 2.3 | 3.6 | 2.0 | 6.0 | 2.4 | 2.1 | 1.3 | .75 | .9 | .9 |
| 23 | 1.60 | 2.0 | 2.2 | 3.2 | 2.0 | 4.7 | 2.45 | 2.1 | 1.4 | .9 | .9 | .9 |
| 24 | 1.75 | 2.0 | 2.2 | 2.9 | 2.35 | 3.5 | 2.45 | 2.1 | 1.4 | 1.0 | .9 | ..... |
| 25 | 1.80 | 2.0 | 2.1 | 3.0 | 2.0 | 3.2 | 2.5 | 1.9 | 1.4 | 1.0 | .9 | ..... |
| 26 | 2.15 | 1.9 | 2.0 | 3.1 | 2.1 | 2.8 | 2.5 | 1.95 | 1.5 | 1.0 | .8 | .9 |
| 27 | 1.95 | 1.9 | 2.0 | 3.1 | 2.1 | 2.7 | 2.5 | 1.9 | 1.75 | 1.0 | .8 | .9 |
| 28 | 1.90 | 1.9 | 1.9 | 3.0 | 2.1 | 2.6 | 2.45 | 1.9 | 1.4 | 1.0 | .8 | .9 |
| 29 | 1.90 | 1.85 | 1.9 | 2.9 | ..... | 2.8 | 2.35 | 1.9 | 1.5 | .9 | .8 | .9 |
| 30 | 2.00 | 1.75 | 2.0 | 2.8 | ..... | 2.6 | 2.3 | 1.8 | 1.5 | 1.0 | .9 | .9 |
| 31 | 1.90 | ..... | 2.2 | 2.8 | ..... | 2.55 | ..... | 1.8 | ..... | 1.0 | .9 | ..... |

*Daily discharge, in second-feet, of Little Cow Creek at Palo Cedro, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 18 | 49 | 150 | 248 | 100 | 182 | 146 | 59 | 38 | 12 | 7 |
| 2 | 5 | 18 | 38 | 74 | 248 | 114 | 182 | 114 | 54 | 38 | 12 | 7 |
| 3 | 5 | 18 | 41 | 63 | 202 | 114 | 182 | 114 | 50 | 38 | 7 | 7 |
| 4 | 5 | 33 | 38 | 74 | 164 | 114 | 625 | 100 | 46 | 38 | 3 | 7 |
| 5 | 5 | 33 | 38 | 53 | 164 | 100 | 505 | 100 | 46 | 38 | 3 | 12 |
| 6 | 5 | 4,480 | 38 | 150 | 164 | 100 | 465 | 114 | 46 | 34 | 7 | 12 |
| 7 | 6 | 780 | 38 | 53 | 164 | 100 | 302 | 130 | 46 | 31 | 7 | 12 |
| 8 | 6 | 244 | 31 | 53 | 164 | 100 | 248 | 130 | 46 | 24 | 3 | 7 |
| 9 | 6 | 231 | 38 | 53 | 146 | 100 | 224 | 224 | 46 | 24 | 3 | 7 |
| 10 | 6 | 398 | 38 | 53 | 138 | 100 | 224 | 164 | 46 | 24 | 3 | 7 |
| 11 | 7 | 244 | 31 | 53 | 146 | 100 | 182 | 155 | 38 | 18 | 7 | 7 |
| 12 | 6 | 171 | 38 | 53 | 130 | 100 | 182 | 146 | 38 | 18 | 7 | 7 |
| 13 | 6 | 131 | 38 | 1,080 | 114 | 100 | 202 | 130 | 38 | 18 | 7 | 7 |
| 14 | 7 | 398 | 38 | 2,830 | 114 | 100 | 182 | 122 | 38 | 15 | 7 | 7 |
| 15 | 8 | 398 | 594 | 2,340 | 114 | 93 | 302 | 100 | 38 | 12 | 7 | 7 |
| 16 | 7 | 171 | 2,610 | 1,670 | 130 | 86 | 182 | 100 | 31 | 12 | 7 | 7 |
| 17 | 6 | 131 | 1,080 | 1,360 | 114 | 100 | 182 | 100 | 31 | 7 | 7 | 7 |
| 18 | 6 | 131 | 830 | 3,800 | 114 | 378 | 274 | 100 | 31 | 7 | 7 | 7 |
| 19 | 5 | 74 | 244 | 1,170 | 107 | 362 | 202 | 114 | 28 | 3 | 3 | 7 |
| 20 | 6 | 131 | 150 | 910 | 107 | 248 | 182 | 100 | 31 | 3 | 7 | 7 |
| 21 | 6 | 74 | 131 | 465 | 100 | 670 | 182 | 100 | 31 | 3 | 7 | 7 |
| 22 | 6 | 63 | 98 | 505 | 100 | 1,770 | 164 | 114 | 31 | 2 | 7 | 7 |
| 23 | 8 | 63 | 86 | 362 | 100 | 1,010 | 173 | 114 | 38 | 7 | 7 | 7 |
| 24 | 13 | 63 | 86 | 274 | 155 | 465 | 173 | 114 | 38 | 12 | 7 | 7 |
| 25 | 15 | 63 | 74 | 302 | 100 | 362 | 182 | 86 | 38 | 12 | 7 | 7 |
| 26 | 37 | 53 | 63 | 332 | 114 | 248 | 182 | 93 | 46 | 12 | 3 | 7 |
| 27 | 23 | 53 | 63 | 332 | 114 | 224 | 182 | 86 | 69 | 12 | 3 | 7 |
| 28 | 20 | 53 | 53 | 302 | 114 | 202 | 173 | 86 | 38 | 12 | 3 | 7 |
| 29 | 20 | 49 | 53 | 274 | ..... | 248 | 155 | 86 | 46 | 7 | 3 | 7 |
| 30 | 26 | 41 | 63 | 248 | ..... | 202 | 146 | 74 | 46 | 12 | 7 | 7 |
| 31 | 20 | ..... | 86 | 248 | ..... | 192 | ..... | 74 | ..... | 12 | 7 | ..... |

NOTE.—Discharge determined as follows: Oct. 1 to Nov. 6, from a fairly well defined rating curve; Nov. 7 to Jan 18, by the indirect method for shifting channels; Jan. 19 to Sept. 30, from a well-defined rating curve; for days for which gage heights are not recorded, interpolated.

*Monthly discharge of Little Cow Creek at Palo Cedro, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 37 | 5 | 10.1 | 621 | B. |
| November | 4,480 | 18 | 294 | 17,500 | C. |
| December | 2,610 | 31 | 222 | 13,600 | D. |
| January | 3,800 | 53 | 635 | 39,000 | C. |
| February | 248 | 100 | 139 | 7,720 | A. |
| March | 1,770 | 86 | 268 | 16,500 | A. |
| April | 625 | 146 | 231 | 13,700 | A. |
| May | 224 | 74 | 114 | 7,010 | A. |
| June | 69 | 28 | 41.6 | 2,480 | C. |
| July | 38 | 2 | 17.5 | 1,080 | C. |
| August | 12 | 3 | 6.0 | 369 | B. |
| September | 12 | 7 | 7.5 | 446 | B. |
| The year | 4,480 | 2 | 166 | 120,000 | |

## BEAR CREEK NEAR MILLVILLE, CAL.

LOCATION.—In sec. 36, T. 31 N., R. 3 W., at highway bridge, about 4 miles southeast of Millville, and 5 miles above junction with Sacramento River.

RECORDS AVAILABLE.—August 19, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on upstream side of bridge pier near left bank. March 15, 1913, a vertical staff in two sections was fastened to an alder tree on left bank, 400 feet above bridge and above influence of dam; different datum. At times there is a slight inflow between the two gages.

CHANNEL.—Small bowlders; rough. The low-water control previous to March 16 was a small rock and brush dam which was subject to change.

DISCHARGE MEASUREMENTS.—Made by wading or from the bridge.

DIVERSIONS.—Small quantity of water is diverted into this drainage basin from the headwaters of Hat Creek, and is used for development of power.

ACCURACY.—Results only fair, previous to March 15, 1913, on account of the many changes in the control. Rating curve for new gage well defined; result. excellent.

*Discharge measurements of Bear Creek near Millville, Cal., during the year ending Sept. 30, 1913.*

[Old gage.]

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 27 | Lasley Lee | 1.05 | 27 | Mar. 25 | G. H. Canfield | 1.54 | 98 |
| Jan. 19 | G. H. Canfield | 2.72 | 362 | Apr. 15 | do | 2.32 | 255 |
| 20 | do | 2.05 | 175 | 15 | do | 2.22 | 231 |
| Mar. 2 | do | 1.13 | 51 | 15 | do | 1.91 | 168 |
| 2 | do | 1.14 | 51 | May 22 | do | .82 | 31 |
| 16 | do | 1.10 | 48 | Sept. 11 | Lasley Lee | .45 | 8.8 |

[New gage.]

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 16 | G. H. Canfield | 2.00 | 48 | Apr. 15 | G. H. Canfield | 3.05 | 167 |
| 25 | do | 2.52 | 98 | May 22 | do | 1.69 | 31 |
| Apr. 15 | do | 3.63 | 252 | Sept. 11 | Lasley Lee | 1.10 | 7 |
| 15 | do | 3.48 | 228 | | | | |

*Daily gage height, in feet, of Bear Creek near Millville, Cal., for the year ending Sept. 30, 1913.*

[Fred Dersch, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.65 | 0.95 | 0.90 | 1.00 | 1.6 | 1.10 | 2.52 | 2.40 | 1.70 | 1.60 | 1.10 | 1.00 |
| 2 | .60 | 1.00 | .90 | 1.00 | 1.6 | 1.10 | 2.5 | 2.35 | 1.70 | 1.60 | 1.10 | 1.10 |
| 3 | .60 | 1.00 | .90 | 1.00 | 1.55 | 1.10 | 2.6 | 2.20 | 1.70 | 1.50 | 1.10 | 1.05 |
| 4 | .60 | 1.05 | .96 | 1.00 | 1.5 | 1.10 | 4.1 | 1.95 | 1.70 | 1.40 | 1.10 | 1.00 |
| 5 | .60 | 5.55 | .98 | 1.00 | 1.5 | 1.10 | 4.8 | 1.90 | 1.60 | 1.30 | 1.10 | 1.00 |
| 6 | .60 | 5.0 | .99 | 1.00 | 1.5 | 1.15 | 4.4 | 1.9 | 1.60 | 1.30 | 1.18 | 1.00 |
| 7 | .60 | 4.0 | 1.00 | 1.00 | 1.5 | 1.15 | 3.9 | 1.85 | 1.50 | 1.35 | 1.10 | 1.00 |
| 8 | .60 | 3.1 | 1.00 | 1.00 | 1.5 | 1.20 | 3.6 | 1.80 | 1.52 | 1.38 | 1.10 | 1.00 |
| 9 | .60 | 3.0 | .98 | 1.05 | 1.5 | 1.20 | 2.8 | 1.90 | 1.55 | 1.30 | 1.10 | 1.00 |
| 10 | .62 | 2.0 | .95 | 1.00 | 1.5 | 1.20 | 2.7 | 1.95 | 1.50 | 1.25 | 1.10 | 1.00 |
| 11 | .62 | 1.5 | .90 | 1.00 | 1.45 | 1.20 | 2.65 | 2.00 | 1.5 | 1.20 | 1.10 | 1.10 |
| 12 | .62 | 1.5 | .90 | 1.7 | 1.42 | 1.15 | 2.6 | 2.02 | 1.45 | 1.20 | 1.00 | ..... |
| 13 | .65 | 1.40 | .90 | 3.0 | 1.30 | 1.10 | 2.55 | 2.00 | 1.42 | 1.20 | 1.05 | ..... |
| 14 | .68 | 1.38 | .90 | 2.0 | 1.8 | 1.12 | 2.7 | 2.00 | 1.40 | 1.20 | 1.05 | 1.00 |
| 15 | .70 | 1.30 | .92 | 3.0 | 1.30 | 1.10 | 3.9 | 1.95 | 1.40 | 1.10 | 1.00 | 1.00 |
| 16 | .70 | 1.30 | .90 | 4.0 | 1.30 | 2.00 | 3.8 | 1.90 | 1.40 | 1.10 | .92 | 1.00 |
| 17 | .70 | 1.30 | .90 | 4.0 | 1.30 | 2.02 | 3.6 | 1.90 | 1.40 | 1.10 | 1.00 | 1.00 |
| 18 | .70 | 1.30 | 2.0 | 3.0 | 1.30 | 2.65 | 3.4 | 1.80 | 1.32 | 1.10 | 1.00 | 1.00 |
| 19 | .70 | 1.30 | 2.0 | 2.75 | 1.30 | 2.8 | 3.0 | 1.80 | 1.30 | 1.10 | 1.00 | 1.00 |
| 20 | .70 | 1.30 | 1.9 | 2.7 | 1.30 | 2.7 | 2.9 | 1.70 | 1.30 | 1.10 | .90 | 1.00 |
| 21 | .70 | 1.00 | 1.8 | 1.90 | 1.30 | 2.5 | 2.6 | 1.60 | 1.30 | 1.10 | .90 | 1.00 |
| 22 | .70 | 1.00 | 1.5 | 1.85 | 1.20 | 4.1 | 2.6 | 1.60 | 1.40 | 1.10 | .90 | 1.00 |
| 23 | .70 | 1.00 | 1.5 | 1.8 | 1.20 | 4.0 | 2.6 | 1.60 | 1.60 | 1.10 | 1.00 | 1.00 |
| 24 | .70 | 1.00 | 1.32 | 1.6 | 1.20 | 2.7 | 2.6 | 1.60 | 1.60 | 1.10 | 1.00 | 1.00 |
| 25 | .70 | 1.00 | 1.20 | 1.6 | 1.15 | 2.55 | 2.6 | 1.60 | 1.60 | 1.10 | 1.00 | 1.00 |
| 26 | .75 | .95 | 1.20 | 1.6 | 1.12 | 2.35 | 2.6 | 1.60 | 2.0 | 1.15 | 1.00 | 1.00 |
| 27 | .92 | .90 | 1.12 | 1.6 | 1.10 | 2.30 | 2.6 | 1.70 | 2.6 | 1.20 | 1.00 | ..... |
| 28 | .85 | .90 | 1.12 | 1.6 | 1.10 | 2.40 | 2.5 | 1.68 | 2.4 | 1.15 | 1.00 | ..... |
| 29 | .88 | .86 | 1.05 | 1.7 | ..... | 2.55 | 2.5 | 1.70 | 1.88 | 1.12 | 1.00 | 1.00 |
| 30 | .90 | .80 | 1.05 | 1.6 | ..... | 2.5 | 2.5 | 1.70 | 1.80 | 1.10 | 1.00 | 1.00 |
| 31 | .95 | ..... | 1.05 | 1.6 | ..... | 2.6 | ..... | 1.70 | ..... | 1.10 | 1.00 | ..... |

NOTE.—Oct. 1 to Mar. 15, old gage was read; Mar. 16 to Sept. 30, new gage.

*Daily discharge, in second-feet, of Bear Creek near Millville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 20 | 34 | 41 | 101 | 48 | 97 | 84 | 30 | 25 | 7 | 5 |
| 2 | 5 | 23 | 34 | 41 | 101 | 48 | 95 | 79 | 30 | 25 | 7 | 7 |
| 3 | 5 | 23 | 34 | 41 | 95 | 48 | 106 | 65 | 30 | 20 | 7 | 6 |
| 4 | 5 | 26 | 38 | 41 | 89 | 48 | 330 | 46 | 30 | 16 | 7 | 5 |
| 5 | 5 | 1,780 | 40 | 41 | 89 | 48 | 455 | 42 | 25 | 12 | 7 | 5 |
| 6 | 5 | 1,450 | 40 | 41 | 89 | 52 | 383 | 42 | 25 | 12 | 9 | 5 |
| 7 | 5 | 910 | 41 | 41 | 89 | 52 | 296 | 39 | 20 | 14 | 7 | 5 |
| 8 | 5 | 500 | 41 | 41 | 89 | 56 | 247 | 36 | 21 | 15 | 7 | 5 |
| 9 | 5 | 460 | 40 | 44 | 89 | 56 | 130 | 42 | 22 | 12 | 7 | 5 |
| 10 | 6 | 166 | 38 | 41 | 89 | 56 | 117 | 46 | 20 | 10 | 7 | 5 |
| 11 | 6 | 89 | 34 | 41 | 83 | 56 | 112 | 49 | 20 | 9 | 7 | 7 |
| 12 | 6 | 89 | 34 | 115 | 79 | 52 | 106 | 51 | 18 | 9 | 5 | 6 |
| 13 | 6 | 77 | 34 | 460 | 66 | 48 | 100 | 49 | 17 | 9 | 6 | 6 |
| 14 | 7 | 75 | 34 | 166 | 131 | 50 | 117 | 49 | 16 | 9 | 6 | 5 |
| 15 | 8 | 66 | 35 | 460 | 66 | 48 | 296 | 46 | 16 | 7 | 5 | 5 |
| 16 | 8 | 66 | 34 | 910 | 66 | 49 | 279 | 42 | 16 | 7 | 4 | 5 |
| 17 | 8 | 66 | 34 | 910 | 66 | 51 | 247 | 42 | 16 | 7 | 5 | 5 |
| 18 | 8 | 66 | 166 | 460 | 66 | 112 | 215 | 36 | 13 | 7 | 5 | 5 |
| 19 | 8 | 66 | 166 | 372 | 66 | 130 | 156 | 36 | 12 | 7 | 5 | 5 |
| 20 | 8 | 66 | 148 | 355 | 66 | 117 | 143 | 30 | 12 | 7 | 4 | 5 |
| 21 | 8 | 41 | 131 | 148 | 66 | 95 | 106 | 25 | 12 | 7 | 4 | 5 |
| 22 | 8 | 41 | 89 | 140 | 56 | 330 | 106 | 25 | 16 | 7 | 4 | 5 |
| 23 | 8 | 41 | 89 | 131 | 56 | 313 | 106 | 25 | 25 | 7 | 5 | 5 |
| 24 | 8 | 41 | 68 | 101 | 56 | 117 | 106 | 25 | 25 | 7 | 5 | 5 |
| 25 | 8 | 41 | 56 | 101 | 52 | 100 | 106 | 25 | 25 | 7 | 5 | 5 |
| 26 | 10 | 38 | 56 | 101 | 50 | 79 | 106 | 25 | 49 | 8 | 5 | 5 |
| 27 | 18 | 34 | 50 | 101 | 48 | 74 | 106 | 30 | 106 | 9 | 5 | 5 |
| 28 | 14 | 34 | 50 | 101 | 48 | 84 | 95 | 29 | 84 | 8 | 5 | 5 |
| 29 | 16 | 32 | 44 | 115 | ..... | 100 | 95 | 30 | 41 | 7 | 5 | 5 |
| 30 | 17 | 28 | 44 | 101 | ..... | 95 | 95 | 30 | 36 | 7 | 5 | 5 |
| 31 | 20 | ..... | 44 | 101 | ..... | 106 | ..... | 30 | ..... | 7 | 5 | ..... |

NOTE.—Discharge determined as follows: Oct. 1 to Nov. 5, from a fairly well defined curve; Nov. 6 to Mar. 15, from a fairly well defined curve; Mar. 16 to Sept. 30, from a well-defined curve (applicable to readings on the new gage). Discharge for days for which gage heights are not recorded, interpolated.

*Monthly discharge of Bear Creek near Millville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 20 | 5 | 8.4 | 516 | C. |
| November | 1,780 | 20 | 215 | 12,800 | C. |
| December | 166 | 34 | 58.7 | 3,610 | B. |
| January | 910 | 41 | 190 | 11,700 | C. |
| February | 131 | 48 | 75.2 | 4,180 | B. |
| March | 330 | 48 | 87.7 | 5,390 | B. |
| April | 455 | 95 | 168 | 10,000 | A. |
| May | 84 | 25 | 40.3 | 2,480 | A. |
| June | 106 | 12 | 27.6 | 1,640 | A. |
| July | 25 | 7 | 10.3 | 633 | A. |
| August | 9 | 4 | 5.7 | 350 | B. |
| September | 7 | 5 | 5.2 | 309 | B. |
| The year | 1,780 | 4 | 74.1 | 53,600 | |

NOTE.—Maximum recorded gage height for new gage occurred Apr. 5, 1913, at 3.30 p. m.; stage, 5.2 feet discharge, 529 second-feet.

## NORTH FORK OF COTTONWOOD CREEK AT ONO, CAL.

LOCATION.—Near the center of sec. 11, T. 30 N., R. 7 W., at the highway bridge one-fourth mile southwest of Ono. Byron Creek enters 250 feet above and Eagle Creek half a mile below the station.

RECORDS AVAILABLE.—October 27, 1907, to September 30, 1913.

DRAINAGE AREA.—52 square miles.

GAGE.—Vertical staff on left face of middle pier of bridge.

CHANNEL.—Gravel and small bowlders; subject to slight change at high stages.

DISCHARGE MEASUREMENTS.—Made from the bridge or by wading.

DIVERSIONS.—Several small ditches divert water above the station.

ACCURACY.—Results good.

*Discharge measurements of North Fork of Cottonwood Creek at Ono, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 25 | G. H. Canfield | 5.15 | 94 | Apr. 11 | G. H. Canfield | 5.29 | 122 |
| Mar. 24 | do | 5.09 | 84 | May 6 | do | 5.08 | 81 |
| Mar. 27 | do | 5.10 | 85 | Sept. 25 | Lasley Lee | 3.95 | 1.2 |

*Daily gage height, in feet, of North Fork of Cottonwood Creek at Ono, Cal., for the year ending Sept. 30, 1913.*

[F. J. Wheelock, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.41 | 4.50 | 4.71 | 4.84 | 5.42 | 5.10 | 5.20 | 5.20 | 4.79 | 4.55 | 4.06 | 3.90 |
| 2 | 4.40 | 4.50 | 4.75 | 4.82 | 5.41 | 5.12 | 5.19 | 5.16 | 4.81 | 4.50 | 4.18 | 3.90 |
| 3 | 4.38 | 4.50 | 4.75 | 4.85 | 5.40 | 5.10 | 5.25 | 5.15 | 4.75 | 4.51 | 4.06 | 3.92 |
| 4 | 4.38 | 4.50 | 4.72 | 4.81 | 5.36 | 5.10 | 5.40 | 5.12 | 4.76 | 4.50 | 4.01 | 3.92 |
| 5 | 4.38 | 5.40 | 4.72 | 4.80 | 5.32 | 5.10 | 5.46 | 5.10 | 4.98 | 4.46 | 4.00 | 3.91 |
| 6 | 4.40 | 5.70 | 4.70 | 4.80 | 5.31 | 5.10 | 5.42 | 5 09 | 4.76 | 4.41 | 4.00 | 3.90 |
| 7 | 4.40 | 5.15 | 4.70 | 4.80 | 5.30 | 5.10 | 5.38 | 5.14 | 4.75 | 4.36 | 3.99 | 3.92 |
| 8 | 4 40 | 4.99 | 4.70 | 4.80 | 5.30 | 5.10 | 5.35 | 5.11 | 4.75 | 4.38 | 3.94 | 3.92 |
| 9 | 4.40 | 5.48 | 4.68 | 4.80 | 5.30 | 5.10 | 5.32 | 5.11 | 4.91 | 4.30 | 3.90 | 3.92 |
| 10 | 4.40 | 5.24 | 4.68 | 4.81 | 5.31 | 5.10 | 5.30 | 5.10 | 4.86 | 4.34 | 3.90 | 3.92 |
| 11 | 4.40 | 5.15 | 4.68 | 4.80 | 5.32 | 5.10 | 5.30 | 5.09 | 4.80 | 4.30 | 3.90 | 3.92 |
| 12 | 4.40 | 5.01 | 4.71 | 4.80 | 5.30 | 5.10 | 5.31 | 5.10 | 4.70 | 4.24 | 3.90 | 3.92 |
| 13 | 4.40 | 4.98 | 4.70 | 5.55 | 5.30 | 5.10 | 5.34 | 5.06 | 4.66 | 4.38 | 3.90 | 3.95 |
| 14 | 4.40 | 5.21 | 4.98 | 5.65 | 5.30 | 5.05 | 5.41 | 5.02 | 4.65 | 4.35 | 3.90 | ..... |
| 15 | 4.40 | 5.04 | 5.12 | 5.55 | 5.30 | 5.05 | 5.45 | 5.00 | 4.64 | 4.28 | 3.90 | 3.95 |
| 16 | 4.40 | 5.00 | 5.40 | 5.48 | 5.30 | 5.02 | 5.38 | 5.00 | 4.61 | 4.25 | 3.90 | 3.95 |
| 17 | 4.40 | 4.98 | 5.10 | 5.40 | 5.32 | 5.26 | 5.38 | 5.00 | 4.59 | 4.24 | ..... | 3.94 |
| 18 | 4.40 | 4.95 | 5.04 | 6.60 | 5.30 | 5.22 | 5.51 | 5.06 | 4.60 | 4.22 | 3.90 | 3.94 |
| 19 | 4.40 | 4.92 | 4.99 | 5.52 | 5.29 | 5.18 | 5.41 | 5.04 | 4.60 | 4.18 | 3.90 | 3.94 |
| 20 | 4.40 | 4.90 | 4.98 | 5.42 | 5.28 | 5.12 | 5.40 | 5.01 | 4.60 | 4.14 | 3.90 | 3.95 |
| 21 | 4.40 | 4.88 | 4.98 | 5.34 | 5.26 | 5.20 | 5.39 | 4.98 | 4.55 | 4.32 | 3.90 | 3.95 |
| 22 | 4.40 | 4.85 | 4.94 | 5.29 | 5.20 | 5.14 | 5.38 | 4.96 | 4.54 | 4.11 | 3.90 | 3.95 |
| 23 | 4.41 | 4.80 | 4.90 | 5.24 | 5.20 | 5.11 | 5.35 | 4.94 | 4.54 | 4.22 | 3.90 | 3.95 |
| 24 | 4.40 | 4.78 | 4.86 | 5.20 | 5.20 | 5.10 | 5.30 | 4.89 | 4.51 | 4.30 | ..... | 3.95 |
| 25 | 4.50 | 4.79 | 4.88 | 5.28 | 5.19 | 5.10 | 5.30 | 4.85 | 4.92 | 4.30 | 3.92 | 3.95 |
| 26 | 4.50 | 4.78 | 4.85 | 5.30 | 5.15 | 5.08 | 5.30 | 4.81 | 4.76 | 4.30 | 3.92 | 3.95 |
| 27 | 4.50 | 4.75 | 4.84 | 5.32 | 5.12 | 5.10 | 5.30 | 4.95 | 4.80 | 4.26 | 3.91 | 3.95 |
| 28 | 4.50 | 4.75 | 4.81 | 5.35 | 5.11 | 5.09 | 5.30 | 4.92 | 4.68 | 4.24 | 3.90 | ..... |
| 29 | 4.58 | 4.72 | 4.80 | 5 36 | ..... | 5.11 | 5.28 | 4.88 | 4.68 | 4.29 | 3.90 | ..... |
| 30 | 4.50 | 4.72 | 4.86 | 5.39 | ..... | 5.15 | 5.22 | 4.81 | 4.55 | 4.20 | 3.90 | ..... |
| 31 | 4.50 | ..... | 4.90 | 5.40 | ..... | 5.18 | ..... | 4.80 | ..... | 4.10 | ..... | ..... |

*Daily discharge, in second-feet, of North Fork of Cottonwood Creek at Ono, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 18 | 35 | 53 | 178 | 85 | 107 | 107 | 37 | 16 | 2.1 | 1.0 |
| 2 | 12 | 18 | 40 | 49 | 174 | 89 | 105 | 98 | 39 | 13 | 3.7 | 1.0 |
| 3 | 11 | 18 | 40 | 54 | 170 | 85 | 121 | 96 | 32 | 14 | 2.1 | 1.1 |
| 4 | 11 | 18 | 36 | 48 | 156 | 85 | 170 | 89 | 34 | 13 | 1.6 | 1.1 |
| 5 | 11 | 211 | 36 | 46 | 142 | 85 | 194 | 85 | 64 | 11 | 1.5 | 1.0 |
| 6 | 12 | 349 | 34 | 46 | 138 | 85 | 178 | 83 | 34 | 9 | 1.5 | 1.0 |
| 7 | 12 | 126 | 34 | 46 | 135 | 85 | 163 | 94 | 32 | 7.5 | 1.5 | 1.1 |
| 8 | 12 | 84 | 34 | 46 | 135 | 85 | 152 | 87 | 32 | 8 | 1.2 | 1.1 |
| 9 | 12 | 244 | 32 | 46 | 135 | 85 | 142 | 87 | 53 | 6 | 1.0 | 1.1 |
| 10 | 12 | 154 | 32 | 48 | 138 | 85 | 135 | 85 | 46 | 7 | 1.0 | 1.1 |
| 11 | 12 | 126 | 32 | 46 | 142 | 85 | 135 | 83 | 38 | 6 | 1.0 | 1.1 |
| 12 | 12 | 89 | 35 | 46 | 135 | 85 | 138 | 85 | 27 | 5 | 1.0 | 1.1 |
| 13 | 12 | 81 | 34 | 275 | 135 | 85 | 149 | 78 | 24 | 8 | 1.0 | 1.2 |
| 14 | 12 | 144 | 81 | 324 | 135 | 76 | 174 | 71 | 23 | 7 | 1.0 | 1.2 |
| 15 | 12 | 96 | 118 | 275 | 135 | 76 | 190 | 67 | 22 | 5.5 | 1.0 | 1.2 |
| 16 | 12 | 86 | 211 | 244 | 135 | 71 | 163 | 67 | 20 | 5 | 1.0 | 1.2 |
| 17 | 12 | 81 | 112 | 211 | 142 | 124 | 163 | 67 | 18 | 5 | 1.0 | 1.2 |
| 18 | 12 | 74 | 96 | 1,000 | 135 | 113 | 214 | 78 | 19 | 4.5 | 1.0 | 1.2 |
| 19 | 12 | 68 | 84 | 219 | 132 | 103 | 174 | 74 | 19 | 3.7 | 1.0 | 1.2 |
| 20 | 12 | 63 | 81 | 178 | 129 | 89 | 170 | 69 | 19 | 3.1 | 1.0 | 1.2 |
| 21 | 12 | 60 | 81 | 149 | 124 | 107 | 166 | 64 | 16 | 6.5 | 1.0 | 1.2 |
| 22 | 12 | 54 | 72 | 132 | 107 | 94 | 163 | 61 | 15 | 2.6 | 1.0 | 1.2 |
| 23 | 13 | 46 | 63 | 118 | 107 | 87 | 152 | 57 | 15 | 4.5 | 1.0 | 1.2 |
| 24 | 12 | 44 | 56 | 107 | 107 | 85 | 135 | 50 | 14 | 6 | 1.0 | 1.2 |
| 25 | 18 | 45 | 60 | 129 | 105 | 85 | 135 | 44 | 54 | 6 | 1.1 | 1.2 |
| 26 | 18 | 44 | 54 | 135 | 96 | 81 | 135 | 39 | 34 | 6 | 1.1 | 1.2 |
| 27 | 18 | 40 | 53 | 142 | 89 | 85 | 135 | 59 | 38 | 5 | 1.0 | 1.2 |
| 28 | 18 | 40 | 48 | 152 | 87 | 83 | 135 | 54 | 25 | 5 | 1.0 | 1.2 |
| 29 | 24 | 36 | 46 | 156 | ..... | 87 | 129 | 48 | 25 | 6 | 1.0 | 1.2 |
| 30 | 18 | 36 | 56 | 166 | ..... | 96 | 113 | 39 | 16 | 4 | 1.0 | 1.2 |
| 31 | 18 | ..... | 63 | 170 | ..... | 103 | ..... | 38 | ..... | 2.5 | 1.0 | 1.2 |

NOTE.—Discharge determined from two fairly well defined rating curves applicable Oct. 1, 1912, to Jan. 18, 1913, and Jan. 19 to Sept. 30, 1913. Discharge interpolated for days for which gage heights are not recorded.

*Monthly discharge of North Fork of Cottonwood Creek at Ono, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 24 | 11 | 13.5 | 830 | B. |
| November | 349 | 18 | 86.4 | 5,140 | B. |
| December | 211 | 32 | 60.9 | 3,740 | B. |
| January | 1,050 | 46 | 158 | 9,720 | C. |
| February | 178 | 87 | 131 | 7,280 | B. |
| March | 124 | 71 | 88.8 | 5,460 | B. |
| April | 214 | 105 | 151 | 8,980 | B. |
| May | 107 | 38 | 71.1 | 4,370 | B. |
| June | 64 | 14 | 29.5 | 1,760 | B. |
| July | 16 | 2.5 | 6.82 | 419 | B. |
| August | 3.7 | 1 | 1.24 | 76 | B. |
| September | 1.2 | 1 | 1.15 | 68 | B. |
| The year | 1,050 | 1 | 66.2 | 47,800 | |

## MILL CREEK NEAR LOS MOLINOS, CAL.

LOCATION.—In the NE. ¼ sec. 1, T. 25 N., R. 2 W., at suspension footbridge one-fourth mile above Los Molinos Land Co.'s diversion dam, 4½ miles northeast of Los Molinos, and 5 miles east of Tehama.

RECORDS AVAILABLE.—August 9, 1909, to August 29, 1913 (fragmentary).

DRAINAGE AREA.—173 square miles.

GAGE.—Inclined staff on right bank at footbridge.

CHANNEL.—Cemented gravel and small bowlders; probably permanent. At medium and high stages the current is swift.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

COOPERATION.—Gage-height record furnished by the Los Molinos Land Co.

Estimates of discharge withheld on account of insufficient data.

*Discharge measurements of Mill Creek near Los Molinos, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Oct. 25 | 0.68 | 114 |
| Jan. 16 | 2.48 | 682 |

*Gage-height, in feet, of Mill Creek near Los Molinos, Cal., during the year 1913.*

| Date. | Gage height. |
|---|---|
| July 1 | 1.4 |
| 7 | 1 05 |
| 14 | 1.0 |
| Aug. 24 | .68 |
| 29 | .75 |

## DEER CREEK NEAR VINA, CAL.

LOCATION.—In the NW. ¼ sec. 23, T. 25 N., R. 1 W., 2½ miles northeast of the Roberts ranch house, about 9½ miles northeast of Vina.

RECORDS AVAILABLE.—October 17, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to a sycamore tree on left bank, one-fourth mile above site of old sheep bridge.

CHANNEL.—Gravel and small bowlders; appears permanent.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet below gage or by wading.

ACCURACY.—Rating curve well defined; results excellent.

COOPERATION.—Station maintained in cooperation with Oro Electric Co.

*Discharge measurements of Deer Creek near Vina, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Jan. 15 | 4.37 | 874 |
| Sept. 27 | 2.02 | 88 |

*Daily gage height, in feet, of Deer Creek near Vina, Cal., for the year ending Sept. 30, 1913.*

[David Roberts, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.09 | 2.11 | 2.21 | 2.31 | 2.7 | 2.39 | 3.5 | 3.3 | 2.8 | 2.36 | ..... | 2.07 |
| 2 | 2.08 | 2.15 | 2.20 | 2.29 | 2.7 | 2.37 | 3.5 | 3.2 | ..... | ..... | ..... | 2.07 |
| 3 | 2.08 | 2.20 | 2.20 | 2.27 | 2.65 | 2.39 | 3.35 | 3.2 | 2.7 | 2.30 | 2.14 | 2.06 |
| 4 | 2.08 | 2.25 | 2.20 | 2.25 | 2.6 | 2.42 | 3.45 | 3.25 | ..... | ..... | 2.14 | ..... |
| 5 | 2.08 | 2.23 | 2.19 | 2.23 | 2.6 | 2.42 | 4.3 | 3.3 | 2.75 | 2.30 | 2.12 | 2.05 |
| 6 | 2.09 | 3.4 | 2.19 | 2.23 | 2.55 | 2.45 | 3.8 | 3.4 | ..... | 2.29 | 2.12 | 2.05 |
| 7 | 2.09 | 3.25 | 2.19 | 2.27 | 2.55 | 2.5 | 3.6 | 3.5 | 2.75 | 2.25 | 2.12 | 2.05 |
| 8 | 2.09 | 2.05 | 2.17 | 2.30 | 2.5 | 2.5 | 3.45 | 3.5 | ..... | 2.23 | ..... | ..... |
| 9 | 2.09 | 2.80 | 2.17 | 2.25 | 2.5 | 2.55 | 3.45 | 3.7 | 2.75 | 2.22 | ..... | 2.04 |
| 10 | 2.09 | 3.40 | 2.17 | 2.20 | 2.5 | 2.65 | 3.4 | 3.8 | ..... | ..... | 2.10 | ..... |
| 11 | 2.09 | 2.70 | 2.19 | 2.20 | 2.5 | 2.7 | 3.5 | 3.5 | 2.65 | 2.20 | 2.10 | 2.04 |
| 12 | 2.09 | 2.55 | 2.19 | 2.30 | 2.5 | 2.65 | 3.6 | 3.45 | 2.5 | 2.20 | 2.10 | ..... |
| 13 | 2.09 | 2.47 | 2.20 | 3.25 | 2.5 | 2.6 | 3.6 | ..... | ..... | 2.19 | 2.10 | 2.03 |
| 14 | 2.09 | 2.50 | 2.23 | 4.3 | 2.5 | 2.6 | 3.6 | ..... | 2.42 | 2.18 | ..... | 2.03 |
| 15 | 2.09 | 2.55 | 3.05 | 4.4 | ..... | ..... | 3.5 | ..... | 2.42 | ..... | 2.10 | ..... |
| 16 | 2.09 | 2.45 | 2.75 | 4.1 | 2.55 | 2.5 | 3.35 | ..... | 2.40 | 2.15 | ..... | 2.03 |
| 17 | 2.09 | 2.39 | 2.70 | 3.3 | 2.6 | 2.5 | 3.3 | 3.3 | 2.38 | ..... | 2.10 | ..... |
| 18 | 2.09 | 2.33 | 2.60 | 6.7 | 2.6 | 2.7 | 3.6 | 3.3 | ..... | 2.15 | ..... | 2.03 |
| 19 | 2.09 | 2.31 | ..... | 4.2 | 2.55 | 2.6 | 3.5 | 3.5 | 2.36 | 2.15 | ..... | ..... |
| 20 | 2.09 | 2.43 | 2.45 | 3.3 | 2.5 | 2.65 | 3.5 | 3.3 | ..... | 2.15 | 2.07 | 2.02 |
| 21 | 2.10 | 2.37 | 2.40 | 3.05 | 2.5 | 2.6 | 3.6 | 3.2 | 2.35 | ..... | 2.07 | 2.02 |
| 22 | 2.11 | 2.32 | 2.37 | 2.85 | 2.47 | 3.35 | 3.7 | 3.2 | 2.33 | 2.22 | 2.07 | ..... |
| 23 | 2.28 | 2.30 | 2.35 | 2.7 | 2.45 | 3.0 | 3.6 | 3.15 | ..... | 2.21 | 2.07 | ..... |
| 24 | 2.20 | 2.30 | 2.32 | 2.65 | 2.5 | 2.85 | 3.6 | 3.1 | 2.7 | 2.29 | ..... | 2.02 |
| 25 | 2.20 | 2.27 | 2.30 | 2.65 | 2.45 | 2.8 | 3.8 | ..... | 2.5 | 2.22 | 2.07 | ..... |
| 26 | 2.23 | 2.25 | ..... | 2.7 | 2.42 | 2.8 | 3.8 | 3.0 | ..... | 2.22 | 2.05 | 2.02 |
| 27 | 2.15 | 2.25 | 2.27 | 2.7 | 2.40 | 2.8 | 4.0 | ..... | 2.7 | 2.22 | 2.05 | 2.02 |
| 28 | 2.17 | 2.23 | 2.26 | 2.7 | 2.40 | 2.85 | ..... | ..... | 2.55 | 2.25 | ..... | 2.02 |
| 29 | 2.17 | 2.22 | 2.25 | 2.7 | ..... | 2.9 | ..... | ..... | 2.43 | 2.22 | 2.12 | ..... |
| 30 | 2.20 | 2.21 | 2.25 | 2.7 | ..... | 3.15 | 3.45 | ..... | 2.40 | 2.18 | 2.10 | 2.02 |
| 31 | 2.15 | ..... | 2.32 | 2.7 | ..... | 3.35 | ..... | 2.8 | ..... | ..... | 2.10 | ..... |

*Daily discharge, in second-feet, of Deer Creek near Vina, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99 | 103 | 115 | 131 | 220 | 146 | 490 | 414 | 250 | 140 | 108 | 97 |
| 2 | 98 | 106 | 113 | 127 | 220 | 142 | 490 | 378 | 235 | 134 | 106 | 97 |
| 3 | 98 | 113 | 113 | 124 | 206 | 146 | 433 | 378 | 220 | 129 | 105 | 96 |
| 4 | 98 | 121 | 113 | 121 | 193 | 152 | 471 | 396 | 228 | 129 | 105 | 96 |
| 5 | 98 | 118 | 112 | 118 | 193 | 152 | 842 | 414 | 235 | 129 | 103 | 95 |
| 6 | 99 | 452 | 112 | 118 | 181 | 158 | 612 | 452 | 235 | 127 | 103 | 95 |
| 7 | 99 | 396 | 112 | 124 | 181 | 169 | 530 | 490 | 235 | 121 | 103 | 95 |
| 8 | 99 | 206 | 109 | 129 | 169 | 169 | 471 | 490 | 235 | 118 | 102 | 94 |
| 9 | 99 | 250 | 109 | 121 | 169 | 181 | 471 | 570 | 235 | 116 | 101 | 94 |
| 10 | 99 | 452 | 109 | 113 | 169 | 206 | 452 | 612 | 220 | 114 | 100 | 94 |
| 11 | 99 | 220 | 112 | 113 | 169 | 220 | 490 | 490 | 206 | 113 | 100 | 94 |
| 12 | 99 | 181 | 112 | 129 | 169 | 206 | 530 | 471 | 169 | 113 | 100 | 94 |
| 13 | 99 | 163 | 113 | 396 | 169 | 193 | 530 | 460 | 160 | 112 | 100 | 93 |
| 14 | 99 | 169 | 118 | 842 | 169 | 193 | 530 | 448 | 152 | 110 | 100 | 93 |
| 15 | 99 | 181 | 328 | 890 | 175 | 181 | 490 | 437 | 152 | 108 | 100 | 93 |
| 16 | 99 | 158 | 235 | 746 | 181 | 169 | 433 | 425 | 148 | 106 | 100 | 93 |
| 17 | 99 | 146 | 220 | 414 | 193 | 169 | 414 | 414 | 144 | 106 | 100 | 93 |
| 18 | 99 | 135 | 193 | 2,480 | 193 | 220 | 530 | 414 | 142 | 106 | 99 | 93 |
| 19 | 99 | 131 | 176 | 794 | 181 | 193 | 490 | 490 | 140 | 106 | 98 | 92 |
| 20 | 99 | 154 | 158 | 414 | 169 | 206 | 490 | 414 | 138 | 106 | 97 | 92 |
| 21 | 100 | 142 | 148 | 328 | 169 | 193 | 530 | 378 | 138 | 111 | 97 | 92 |
| 22 | 101 | 133 | 142 | 265 | 163 | 433 | 570 | 378 | 135 | 116 | 97 | 92 |
| 23 | 126 | 129 | 138 | 220 | 158 | 312 | 530 | 361 | 178 | 115 | 97 | 92 |
| 24 | 113 | 129 | 133 | 206 | 169 | 265 | 530 | 344 | 220 | 127 | 97 | 92 |
| 25 | 113 | 124 | 129 | 206 | 158 | 250 | 612 | 328 | 169 | 116 | 97 | 92 |
| 26 | 118 | 121 | 126 | 220 | 152 | 250 | 612 | 312 | 194 | 116 | 95 | 92 |
| 27 | 106 | 121 | 124 | 220 | 148 | 250 | 700 | 300 | 220 | 116 | 95 | 92 |
| 28 | 109 | 118 | 123 | 220 | 148 | 265 | 624 | 287 | 181 | 121 | 99 | 92 |
| 29 | 109 | 116 | 121 | 220 | ..... | 280 | 547 | 275 | 154 | 116 | 103 | 92 |
| 30 | 113 | 115 | 121 | 220 | ..... | 361 | 471 | 262 | 148 | 110 | 100 | 92 |
| 31 | 106 | ..... | 133 | 220 | ..... | 433 | ..... | 250 | ..... | 109 | 100 | ..... |

NOTE.—Daily discharge determined from a rating curve well defined below 1,500 second-feet. Discharge interpolated for periods for which gage heights are not recorded.

*Monthly discharge of Deer Creek near Vina, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 126 | 98 | 103 | 6,330 | A. |
| November | 452 | 103 | 173 | 10,300 | A. |
| December | 328 | 109 | 139 | 8,550 | A. |
| January | 2,480 | 113 | 354 | 21,800 | B. |
| February | 220 | 148 | 176 | 9,780 | A. |
| March | 433 | 142 | 221 | 13,600 | A. |
| April | 842 | 414 | 530 | 31,500 | A. |
| May | 612 | 250 | 404 | 24,800 | A. |
| June | 250 | 135 | 187 | 11,100 | A. |
| July | 140 | 106 | 117 | 7,190 | A. |
| August | 108 | 95 | 100 | 6,150 | A. |
| September | 97 | 92 | 93.4 | 5,560 | A. |
| The year | 2,480 | 92 | 217 | 157,000 | |

## LITTLE STONY CREEK NEAR LODOGA, CAL.

LOCATION.—At East Park Reservoir, 3½ miles northwest of Lodoga, and 4 miles above junction with Stony Creek.

RECORDS AVAILABLE.—January 1, 1908, to September 30, 1913.

DRAINAGE AREA.—102 square miles.

GAGE.—Beginning December 1, 1910, the record is from the gage at the dam. Gage used previous to that date was a short distance below the present site.

DISCHARGE.—Computed from gage heights observed at the dam. Correction has been made for evaporation, which is determined from records obtained from an evaporation pan at the reservoir. When the flow is 10 second-feet or less, the discharge is computed from weir and current-meter measurements taken at the head of the reservoir about 3 miles above the dam.

ACCURACY.—Considerable care is used in collecting these data and results should be good.

COOPERATION.—Record furnished by United States Reclamation Service through A. N. Burch, project manager.

*Daily discharge, in second-feet, of Little Stony Creek near Lodoga, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.0 | 12 | 13 | 55 | 22 | 38 | 35 | 13 | 0 | 0 | 0 |
| 2 | .0 | 1.0 | 12 | 15 | 55 | 20 | 40 | 30 | 16 | 0 | 0 | 3 |
| 3 | .0 | .0 | 12 | 14 | 52 | 24 | 37 | 24 | 15 | 0 | 0 | 3 |
| 4 | .0 | .0 | 12 | 13 | 48 | 26 | 32 | 13 | 11 | 0 | 0 | 3 |
| 5 | .0 | .0 | 12 | 14 | 48 | 26 | 45 | 16 | 11 | 0 | 0 | 2 |
| 6 | .0 | 10 | 12 | 13 | 48 | 26 | 66 | 32 | 13 | 0 | 0 | 3 |
| 7 | .0 | 7.0 | 12 | 12 | 46 | 24 | 56 | 21 | 15 | 0 | 0 | 3 |
| 8 | .0 | 7.0 | 12 | 16 | 46 | 19 | 56 | 16 | 17 | 0 | 0 | 3 |
| 9 | .0 | 5.5 | 12 | 15 | 44 | 21 | 53 | 25 | 15 | 0 | 0 | 3 |
| 10 | .0 | 16 | 12 | 15 | 43 | 22 | 51 | 23 | 2 | 0 | 0 | 2 |
| 11 | .0 | 15 | 12 | 14 | 40 | 28 | 50 | 19 | 5 | 0 | 0 | 2 |
| 12 | .0 | 15 | 12 | 15 | 39 | 26 | 35 | 16 | 11 | 0 | 0 | 3 |
| 13 | .0 | 15 | 12 | 140 | 39 | 23 | 43 | 15 | 11 | 0 | 0 | 3 |
| 14 | .0 | 15 | 12 | 455 | 39 | 21 | 47 | 16 | 9 | 0 | 0 | 2 |
| 15 | .0 | 15 | 32 | 366 | 39 | 21 | 55 | 18 | 2 | 0 | 0 | 2 |
| 16 | .0 | 15 | 31 | 248 | 37 | 21 | 42 | 21 | 2 | 0 | 0 | 3 |
| 17 | .0 | 13 | 44 | 241 | 36 | 21 | 31 | 23 | 2 | 0 | 0 | 3 |
| 18 | .0 | 13 | 38 | 506 | 36 | 23 | 38 | 29 | 2 | 0 | 0 | 2 |
| 19 | .0 | 13 | 40 | 754 | 36 | 32 | 36 | 31 | 2 | 0 | 0 | 2 |
| 20 | .0 | 13 | 30 | 216 | 33 | 33 | 37 | 16 | 1 | 0 | 0 | 3 |
| 21 | .0 | 16 | 20 | 176 | 33 | 29 | 35 | 16 | 2 | 0 | 0 | 3 |
| 22 | .0 | 13 | 20 | 113 | 32 | 29 | 32 | 28 | 1 | 0 | 0 | 3 |
| 23 | .0 | 13 | 20 | 101 | 32 | 33 | 27 | 28 | 2 | 0 | 0 | 2 |
| 24 | .0 | 13 | 20 | 78 | 31 | 30 | 27 | 19 | 1 | 0 | 0 | 2 |
| 25 | 2.5 | 13 | 20 | 66 | 29 | 26 | 27 | 17 | 2 | 0 | 0 | 2 |
| 26 | .0 | 13 | 19 | 16 | 24 | 21 | 39 | 20 | 1 | 0 | 0 | 3 |
| 27 | .5 | 13 | 11 | 16 | 33 | 21 | 41 | 18 | 1 | 0 | 0 | 3 |
| 28 | .0 | 13 | 12 | 65 | 33 | 21 | 31 | 16 | 1 | 0 | 0 | 3 |
| 29 | 12 | 13 | 12 | 61 | ..... | 24 | 28 | 18 | 0 | 0 | 0 | 2 |
| 30 | .0 | 13 | 13 | 56 | ..... | 24 | 22 | 17 | 0 | 0 | 0 | 2 |
| 31 | .0 | ..... | 11 | 54 | ..... | 38 | ..... | 13 | ..... | 0 | 0 | ..... |

*Monthly discharge of Little Stony Creek near Lodoga, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 12 | 0 | 0.48 | 30 |
| November | 16 | 0 | 10.7 | 637 |
| December | 44 | 11 | 18.1 | 1,110 |
| January | 754 | 12 | 129 | 7,930 |
| February | 55 | 24 | 39.5 | 2,190 |
| March | 38 | 19 | 25.0 | 1,540 |
| April | 66 | 22 | 39.8 | 2,370 |
| May | 35 | 13 | 20.9 | 1,290 |
| June | 17 | 0 | 6.2 | 369 |
| July | 0 | 0 | .0 | 0 |
| August | 0 | 0 | .0 | 0 |
| September | 3 | 0 | 2.5 | 149 |
| The year | 754 | 0 | 24.3 | 17,600 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

## FEATHER RIVER AND TRIBUTARIES.

### NORTH FORK OF FEATHER RIVER NEAR PRATTVILLE, CAL.

LOCATION.—4,200 feet downstream from north boundary of sec. 28, T. 27 N., R. 8 E., below the Great Western Power Co.'s dam (under construction) at Big Meadows, about 5 miles southeast of Prattville, and 4 miles above mouth of Butt Creek.

RECORDS AVAILABLE.—June 13, 1905, to September 30, 1913.

DRAINAGE AREA.—506 square miles above dam site.

GAGE.—Friez water-stage recorder installed on left bank 5 feet above vertical staff. Gage used June 13, 1905, to April 28, 1912, was 3,500 feet upstream from present gage and 1,300 feet upstream from that used April 29 to July 31, 1912. Datum of gage, 4,232.32 feet above sea level (United States Geological Survey datum). Original datum has not been maintained.

DISCHARGE MEASUREMENTS.—Made from cable at gage. The results of discharge measurements made at this station have, however, been discarded, as they proved unsatisfactory owing to high velocity of current and roughness of channel, and the discharge for 1912-13 has been computed from a rating curve based on current-meter measurements made in March, 1914, in flume 3,000 feet above the gage.

CHANNEL.—Bowlders; fairly permanent.

ACCURACY.—Rating curve well defined; results considered excellent.

COOPERATION.—Station is maintained and complete data are furnished by Great Western Power Co., through L. P. Cornell, engineer.

*Discharge measurements of North Fork of Feather River near Prattville, Cal., during 1913.*

[Made by Great Western Power Co.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Apr. 4 | 2.90 | 1,540 | June 27 | 2.48 | 1,000 | Aug. 14 | 1.68 | 585 |
| 12 | 3.80 | 3,140 | July 5 | 2.05 | 781 | 30 | 1.61 | 510 |
| May 29 | 3.20 | 1,870 | 7 | 1.95 | 723 | Sept. 4 | 1.28 | 457 |
| June 4 | 2.90 | 1,800 | 12 | 1.80 | 685 | Oct. 4 | 1.62 | 520 |
| 7 | 2.70 | 1,520 | 15 | 1.76 | 665 | 13 | 1.66 | 564 |
| 13 | 2.35 | 872 | 13 | 1.80 | 639 | 18 | 1.72 | 607 |
| 17 | 2.20 | 809 | 24 | 2.00 | 720 | 25 | 1.60 | 546 |
| 21 | 2.10 | 774 | 29 | 1.90 | 652 | | | |
| 26 | 2.50 | 1,020 | 31 | 1.80 | 633 | | | |

NOTE.—All measurements made at the gage.

*Daily gage height, in feet, of North Fork of Feather River near Prattville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.67 | 1.70 | 1.72 | 1.69 | 1.65 | 1.63 | 2.57 | 2.99 | 2.97 | 2.12 | 1.78 | 1.48 |
| 2 | 1.67 | 1.71 | 1.70 | 1.65 | 1.65 | 1.68 | 2.81 | 2.84 | 2.94 | 2.05 | 1.75 | 1.32 |
| 3 | 1.68 | 1.73 | 1.69 | 1.64 | 1.64 | 1.67 | 2.88 | 2.72 | 2.89 | 2.02 | 1.74 | 1.34 |
| 4 | 1.68 | 1.73 | 1.69 | 1.64 | 1.64 | 1.67 | 2.92 | 2.77 | 2.83 | 2.04 | 1.70 | 1.34 |
| 5 | 1.68 | 1.77 | 1.65 | 1.62 | 1.65 | 1.68 | 3.20 | 2.83 | 2.79 | 2.02 | 1.69 | 1.49 |
| 6 | 1.67 | 2.03 | 1.64 | 1.61 | 1.65 | 1.69 | 3.39 | 2.95 | 2.75 | 1.98 | 1.65 | 1.62 |
| 7 | 1.67 | 2.32 | 1.63 | 1.61 | 1.65 | 1.71 | 3.51 | 3.14 | 2.73 | 1.93 | 1.60 | 1.62 |
| 8 | 1.67 | 2.23 | 1.62 | 1.61 | 1.65 | 1.75 | 3.69 | 3.25 | 2.72 | 1.88 | 1.55 | 1.58 |
| 9 | 1.67 | 2.24 | 1.62 | 1.62 | 1.66 | 1.78 | 3.75 | 3.32 | 2.64 | 1.85 | 1.50 | 1.58 |
| 10 | 1.67 | 2.51 | 1.63 | 1.61 | 1.67 | 1.83 | 3.73 | 3.47 | 2.54 | 1.83 | 1.57 | 1.62 |
| 11 | 1.71 | 2.43 | 1.63 | 1.61 | 1.65 | 1.91 | 3.75 | 3.48 | 2.46 | 1.81 | 1.65 | 1.59 |
| 12 | 1.67 | 2.14 | 1.63 | 1.63 | 1.63 | 1.88 | 3.84 | 3.35 | 2.40 | 1.78 | 1.68 | 1.49 |
| 13 | 1.68 | 2.00 | 1.66 | 1.69 | 1.62 | 1.85 | 4.08 | 3.27 | 2.34 | 1.76 | 1.70 | 1.52 |
| 14 | 1.68 | 1.97 | 1.80 | 1.69 | 1.62 | 1.83 | 3.89 | 3.16 | 2.31 | 1.75 | 1.68 | 1.62 |
| 15 | 1.68 | 1.98 | 1.80 | 1.70 | 1.62 | 1.88 | 3.44 | 3.11 | 2.26 | 1.75 | 1.65 | 1.58 |
| 16 | 1.67 | 1.91 | 1.76 | 1.69 | 1.65 | 1.86 | 3.26 | 3.12 | 2.21 | 1.74 | 1.66 | 1.61 |
| 17 | 1.68 | 1.88 | 1.75 | 1.64 | 1.67 | 1.91 | 3.19 | 3.24 | 2.17 | 1.74 | 1.69 | 1.61 |
| 18 | 1.67 | 1.85 | 1.78 | 1.71 | 1.67 | 1.94 | 3.21 | 3.39 | 2.14 | 1.78 | 1.68 | 1.60 |
| 19 | 1.66 | 1.84 | 1.78 | 1.61 | 1.65 | 1.95 | 3.30 | 3.43 | 2.14 | 1.80 | 1.63 | 1.59 |
| 20 | 1.65 | 1.84 | 1.75 | 1.60 | 1.66 | 1.90 | 3.30 | 3.42 | 2.12 | 1.81 | 1.61 | 1.59 |
| 21 | 1.65 | 1.83 | 1.68 | 1.60 | 1.66 | 1.90 | 3.28 | 3.36 | 2.09 | 1.87 | 1.65 | 1.59 |
| 22 | 1.68 | 1.81 | 1.67 | 1.62 | 1.65 | 1.91 | 3.28 | 3.34 | 2.08 | 1.90 | 1.68 | 1.58 |
| 23 | 1.75 | 1.80 | 1.65 | 1.61 | 1.68 | 1.88 | 3.21 | 3.34 | 2.25 | 1.98 | 1.64 | 1.59 |
| 24 | 1.75 | 1.80 | 1.68 | 1.61 | 1.69 | 1.83 | 3.13 | 3.33 | 2.48 | 1.98 | 1.61 | 1.59 |
| 25 | 1.72 | 1.79 | 1.67 | 1.61 | 1.68 | 1.83 | 3.19 | 3.32 | 2.51 | 1.94 | 1.59 | 1.60 |
| 26 | 1.71 | 1.78 | 1.67 | 1.64 | 1.66 | 1.80 | 3.26 | 3.32 | 2.47 | 1.93 | 1.56 | 1.59 |
| 27 | 1.72 | 1.77 | 1.62 | 1.64 | 1.65 | 1.80 | 3.28 | 3.31 | 2.49 | 1.92 | 1.55 | 1.61 |
| 28 | 1.72 | 1.77 | 1.64 | 1.64 | 1.64 | 1.82 | 3.27 | 3.25 | 2.47 | 1.93 | 1.62 | 1.61 |
| 29 | 1.73 | 1.76 | 1.64 | 1.65 | ..... | 1.89 | 3.21 | 3.18 | 2.33 | 1.90 | 1.60 | 1.59 |
| 30 | 1.73 | 1.75 | 1.67 | 1.64 | ..... | 2.03 | 3.12 | 3.04 | 2.21 | 1.87 | 1.56 | 1.60 |
| 31 | 1.70 | ..... | 1.90 | 1.65 | ..... | 2.23 | ..... | 2.99 | ..... | 1.82 | 1.62 | ..... |

*Daily discharge, in second-feet, of North Fork of Feather River near Prattville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 598 | 610 | 618 | 606 | 590 | 582 | 1,040 | 1,320 | 1,310 | 787 | 642 | 523 |
| 2 | 598 | 614 | 610 | 590 | 590 | 602 | 1,190 | 1,220 | 1,290 | 754 | 630 | 465 |
| 3 | 602 | 622 | 606 | 586 | 586 | 598 | 1,240 | 1,130 | 1,250 | 740 | 626 | 472 |
| 4 | 602 | 622 | 606 | 586 | 586 | 598 | 1,270 | 1,160 | 1,210 | 749 | 610 | 472 |
| 5 | 602 | 638 | 590 | 578 | 590 | 602 | 1,500 | 1,210 | 1,180 | 740 | 606 | 526 |
| 6 | 598 | 744 | 586 | 574 | 590 | 606 | 1,690 | 1,290 | 1,150 | 722 | 590 | 578 |
| 7 | 598 | 889 | 582 | 574 | 590 | 614 | 1,820 | 1,450 | 1,140 | 702 | 570 | 578 |
| 8 | 598 | 840 | 578 | 574 | 590 | 630 | 2,060 | 1,540 | 1,130 | 682 | 550 | 562 |
| 9 | 598 | 845 | 578 | 578 | 594 | 642 | 2,140 | 1,620 | 1,080 | 670 | 530 | 562 |
| 10 | 598 | 996 | 582 | 574 | 598 | 662 | 2,110 | 1,770 | 1,020 | 662 | 558 | 578 |
| 11 | 614 | 951 | 582 | 574 | 590 | 694 | 2,140 | 1,780 | 968 | 654 | 590 | 566 |
| 12 | 598 | 797 | 582 | 582 | 582 | 682 | 2,300 | 1,650 | 934 | 642 | 602 | 526 |
| 13 | 602 | 730 | 594 | 606 | 578 | 670 | 2,740 | 1,570 | 900 | 634 | 610 | 538 |
| 14 | 602 | 718 | 650 | 606 | 578 | 662 | 2,380 | 1,470 | 884 | 630 | 602 | 578 |
| 15 | 602 | 722 | 650 | 610 | 578 | 682 | 1,740 | 1,420 | 856 | 630 | 590 | 562 |
| 16 | 598 | 694 | 634 | 606 | 590 | 674 | 1,560 | 1,430 | 830 | 626 | 594 | 574 |
| 17 | 602 | 682 | 630 | 586 | 598 | 694 | 1,490 | 1,540 | 812 | 626 | 606 | 574 |
| 18 | 598 | 670 | 642 | 614 | 598 | 706 | 1,510 | 1,690 | 797 | 642 | 602 | 570 |
| 19 | 594 | 666 | 642 | 574 | 590 | 710 | 1,600 | 1,730 | 797 | 650 | 582 | 566 |
| 20 | 590 | 666 | 630 | 570 | 594 | 690 | 1,600 | 1,720 | 787 | 654 | 574 | 566 |
| 21 | 590 | 662 | 602 | 570 | 594 | 690 | 1,580 | 1,660 | 773 | 678 | 590 | 566 |
| 22 | 602 | 654 | 598 | 578 | 590 | 694 | 1,580 | 1,640 | 768 | 690 | 602 | 562 |
| 23 | 630 | 650 | 590 | 574 | 602 | 642 | 1,510 | 1,640 | 850 | 722 | 586 | 566 |
| 24 | 630 | 650 | 602 | 574 | 606 | 662 | 1,440 | 1,630 | 979 | 722 | 574 | 566 |
| 25 | 618 | 646 | 598 | 574 | 602 | 662 | 1,490 | 1,620 | 996 | 706 | 566 | 570 |
| 26 | 614 | 642 | 598 | 586 | 594 | 650 | 1,560 | 1,620 | 973 | 702 | 554 | 566 |
| 27 | 618 | 638 | 578 | 586 | 590 | 650 | 1,580 | 1,610 | 984 | 698 | 550 | 574 |
| 28 | 618 | 638 | 586 | 586 | 586 | 658 | 1,570 | 1,540 | 973 | 702 | 578 | 574 |
| 29 | 622 | 634 | 586 | 590 | ..... | 686 | 1,510 | 1,480 | 895 | 690 | 570 | 566 |
| 30 | 622 | 630 | 598 | 586 | ..... | 744 | 1,430 | 1,360 | 830 | 678 | 554 | 570 |
| 31 | 610 | ..... | 610 | 590 | ..... | 840 | ..... | 1,320 | ..... | 658 | 578 | ..... |

*Monthly discharge of North Fork of Feather River near Prattville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 630 | 590 | 605 | 37,200 |
| November | 995 | 610 | 705 | 42,000 |
| December | 650 | 578 | 604 | 37,100 |
| January | 614 | 570 | 585 | 36,000 |
| February | 606 | 578 | 591 | 32,800 |
| March | 840 | 582 | 664 | 40,800 |
| April | 2,740 | 1,040 | 1,680 | 100,000 |
| May | 1,780 | 1,130 | 1,510 | 92,800 |
| June | 1,310 | 768 | 978 | 58,200 |
| July | 787 | 626 | 685 | 42,100 |
| August | 642 | 530 | 586 | 36,000 |
| September | 578 | 465 | 554 | 33,000 |
| The year | 2,740 | 465 | 812 | 588,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the United States Geological Survey.

### NORTH FORK OF FEATHER RIVER AT BIG BAR, CAL.

LOCATION.—In the NW. ¼ sec. 32, T. 23 N., R. 5 E., one-fourth mile above Big Bar station on Western Pacific Railway, and about 7 miles above intake of Great Western Power Co.'s power plant at Big Bend.

RECORDS AVAILABLE.—February 24, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Bristol water-stage recorder installed January 17, 1911, 300 feet upstream from original staff installed July, 1910, opposite the middle of Jesse Moore Bar. Gage datum, 1,347.96 feet above sea level. (United States Geological Survey datum). November, 1912, the Bristol gage was moved upstream 130 feet. Gage datum now 1,348.96 feet above sea level.

CHANNEL.—Solid rock, bowlders, and gravel; practically permanent.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet above gage.

ACCURACY.—Rating curve fairly well defined; results considered fair by company.

COOPERATION.—Station maintained and complete data furnished by Great Western Power Co., through L. P. Cornell, engineer.

*Discharge measurements of North Fork of Feather River at Big Bar, Cal., during the years ending Sept. 30, 1911–1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| 1911. | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 17 | L. P. Cornell | 2.02 | 1,390 | Dec. 31 | S. H. Cabot | 2.01 | 1,210 |
| 20 | do | 5.45 | 3,750 | Jan. 1 | do | 2.15 | 1,310 |
| 24 | do | 5.75 | 4,020 | 1 | do | 2.15 | 1,330 |
| 25 | do | 5.80 | 4,160 | 1 | do | 2.00 | 1,320 |
| 26 | do | 5.90 | 3,970 | Aug. 23 | C. D. Kellogg | 1.14 | 911 |
| (a) | do | 5.98 | 4,100 | Sept. 21 | do | 1.32 | 913 |
| (a) | do | 8.28 | 6,980 | 1912–13. | | | |
| (a) | do | 11.26 | 11,800 | Oct. 7 | C. D. Kellogg | 1.33 | 1,020 |
| (a) | do | 10.00 | 9,980 | 24 | do | 1.72 | 1,120 |
| (a) | do | 9.30 | 8,750 | Jan. 21 | P. W. Ham | 3.00 | 1,890 |
| 1911–12. | | | | 27 | do | 2.50 | 1,540 |
| Oct. 23 | S. H. Cabot | 2.09 | 1,310 | Aug. 6 | do | 6.60 | 4,720 |
| 24 | do | 2.09 | 1,280 | 19 | L. P. Cornell | 1.35 | 985 |
| 25 | do | 2.08 | 1,330 | Sept. 13 | do | .95 | 806 |
| Dec. 30 | do | 1.96 | 1,230 | 13 | do | .90 | 781 |

a Measurements made sometime between Jan. 26 and Feb. 6, 1911; exact date not known.

NOTE.—Gage heights refer to datum of gage at Station No. 3, which is 1,348.96 feet above sea level.

*Daily gage height, in feet, of North Fork of Feather River at Big Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May. | June. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.3 | 1.5 | 2.1 | 2.2 | ..... | 5.69 | 6.04 | 5.84 | 1.80 | 1.28 |
| 2 | 1.3 | 1.5 | 2.0 | 2.2 | ..... | 6.06 | 6.04 | 5.78 | 1.72 | 1.07 |
| 3 | 1.3 | 1.8 | 1.9 | 2.1 | ..... | 5.79 | 5.78 | 5.69 | 1.70 | 1.00 |
| 4 | 1.3 | 1.7 | 1.8 | 2.1 | 3.00 | 6.14 | 6.01 | 5.45 | 1.69 | .84 |
| 5 | 1.3 | 2.0 | 1.6 | 2.2 | 3.10 | 6.64 | 6.37 | 5.24 | 1.72 | .90 |
| 6 | 1.3 | 5.2 | 1.4 | 2.2 | 3.26 | 6.82 | 6.74 | 5.04 | 1.65 | 1.01 |
| 7 | 1.3 | 4.6 | 1.6 | 2.3 | 3.47 | 6.64 | 7.05 | 5.02 | 1.56 | 1.10 |
| 8 | 1.3 | 3.8 | 1.7 | 2.3 | 3.60 | 6.55 | 7.02 | 4.85 | 1.51 | 1.13 |
| 9 | 1.3 | 4.8 | 1.8 | 2.4 | 3.74 | 6.80 | 7.96 | 4.61 | 1.49 | 1.13 |
| 10 | 1.3 | 4.9 | 1.7 | 2.5 | 3.94 | 6.93 | 7.38 | 4.34 | 1.35 | 1.14 |
| 11 | 1.3 | 3.9 | 1.6 | 2.5 | 4.10 | 7.26 | 7.09 | 4.24 | 1.42 | 1.13 |
| 13 | 1.3 | 3.2 | 1.8 | 2.5 | 4.00 | 7.54 | 6.81 | 4.10 | 1.50 | 1.05 |
| 13 | 1.3 | 3.0 | 2.0 | 2.5 | 3.80 | 7.77 | 6.62 | 3.95 | 1.49 | .92 |
| 14 | 1.3 | 3.1 | 2.3 | 2.5 | 3.63 | 7.40 | 6.46 | 3.76 | 1.45 | 1.08 |
| 15 | 1.3 | 3.0 | 2.7 | 2.6 | 3.57 | 6.71 | 6.46 | 3.60 | 1.37 | 1.12 |
| 16 | 1.3 | 2.8 | 2.5 | 2.8 | 3.44 | 6.19 | 6.66 | 3.52 | 1.33 | 1.16 |
| 17 | 1.3 | 2.5 | 2.3 | 2.9 | 3.58 | 6.05 | 6.84 | 3.43 | 1.34 | 1.15 |
| 18 | 1.3 | 2.4 | 2.5 | 2.9 | 3.67 | 6.32 | 7.10 | 3.29 | 1.40 | 1.10 |
| 19 | 1.2 | 2.4 | 2.4 | 2.8 | 3.73 | 6.51 | 7.16 | 3.24 | 1.40 | 1.05 |
| 20 | 1.0 | 2.4 | 3.0 | 2.7 | 3.57 | 6.66 | 7.07 | 3.17 | 1.30 | 1.05 |
| 21 | 1.1 | 2.4 | 2.8 | 2.6 | 3.57 | 6.86 | 6.99 | 3.09 | 1.28 | 1.05 |
| 22 | 1.3 | 2.3 | 2.6 | 2.5 | 3.60 | 6.99 | 6.90 | 3.03 | 1.25 | 1.10 |
| 23 | 1.8 | 2.3 | 2.5 | 2.5 | 3.60 | 6.89 | 6.91 | 3.19 | 1.22 | 1.15 |
| 24 | 1.7 | ..... | 2.4 | 2.5 | 3.52 | 6.89 | 6.93 | 3.35 | 1.20 | 1.15 |
| 25 | 1.7 | ..... | 2.4 | 2.4 | 3.39 | 7.11 | 6.85 | 3.40 | 1.22 | 1.10 |
| 26 | 1.7 | ..... | 2.3 | 2.3 | 3.26 | 7.40 | 6.84 | 3.32 | 1.26 | 1.10 |
| 27 | 1.6 | ..... | 2.3 | 2.3 | 3.24 | 7.40 | 6.54 | 3.20 | 1.22 | 1.10 |
| 28 | 1.5 | ..... | 2.3 | 2.3 | 3.35 | 7.10 | 6.29 | 3.10 | 1.26 | 1.15 |
| 29 | 1.6 | ..... | 2.3 | ..... | 3.54 | 6.72 | 6.19 | 3.02 | 1.30 | 1.22 |
| 30 | 1.6 | ..... | 2.3 | ..... | 4.10 | 6.34 | 6.10 | ..... | 1.20 | 1.22 |
| 31 | 1.5 | ..... | ..... | ..... | 4.87 | ..... | 6.02 | ..... | 1.22 | ..... |

*Daily discharge, in second-feet, of North Fork of Feather River at Big Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May. | June. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 940 | 1,050 | 1,300 | 1,350 | ..... | 4,350 | 4,710 | 4,500 | 1,140 | 920 |
| 2 | 940 | 1,100 | 1,240 | 1,350 | ..... | 4,730 | 4,450 | 4,450 | 1,110 | 848 |
| 3 | 940 | 1,200 | 1,200 | 1,300 | ..... | 4,450 | 4,450 | 4,350 | 1,100 | 820 |
| 4 | 940 | 1,150 | 1,150 | 1,300 | 1,900 | 4,810 | 4,680 | 4,130 | 1,100 | ..... |
| 5 | 940 | 1,330 | 1,070 | 1,350 | 1,990 | 5,310 | 5,040 | 3,920 | 1,110 | 780 |
| 6 | 940 | 3,520 | 1,000 | 1,350 | 2,110 | 5,500 | 5,420 | 3,720 | 1,080 | 824 |
| 7 | 940 | 3,100 | 1,070 | 1,400 | 2,280 | 5,310 | 5,740 | 3,700 | 1,030 | 860 |
| 8 | 940 | 2,550 | 1,110 | 1,400 | 2,390 | 5,220 | 5,720 | 3,530 | 1,000 | 872 |
| 9 | 940 | 3,220 | 1,150 | 1,470 | 2,510 | 5,490 | 6,730 | 3,300 | 1,000 | 872 |
| 10 | 940 | 3,300 | 1,110 | 1,530 | 2,680 | 5,610 | 6,090 | 3,040 | 942 | 876 |
| 11 | 940 | 2,620 | 1,070 | 1,530 | 2,820 | 5,960 | 5,780 | 2,940 | 969 | 872 |
| 12 | 940 | 2,120 | 1,150 | 1,530 | 2,740 | 6,270 | 5,500 | 2,820 | 1,000 | 840 |
| 13 | 940 | 2,000 | 1,240 | 1,530 | 2,550 | 6,520 | 5,300 | 2,680 | 1,000 | 788 |
| 14 | 940 | 2,060 | 1,400 | 1,530 | 2,420 | 6,100 | 5,140 | 2,500 | 982 | 852 |
| 15 | 940 | 2,000 | 1,660 | 1,600 | 2,380 | 5,400 | 5,140 | 2,360 | 949 | 868 |
| 16 | 940 | 1,880 | 1,530 | 1,740 | 2,240 | 4,860 | 5,350 | 2,300 | 935 | 884 |
| 17 | 940 | 1,670 | 1,400 | 1,800 | 2,380 | 4,720 | 5,540 | 2,200 | 939 | 880 |
| 18 | 940 | 1,600 | 1,530 | 1,800 | 2,470 | 5,000 | 5,800 | 2,080 | 960 | 860 |
| 19 | 880 | 1,600 | 1,470 | 1,740 | 2,500 | 5,200 | 5,860 | 2,050 | 960 | 840 |
| 20 | 760 | 1,600 | 1,880 | 1,660 | 2,380 | 5,340 | 5,770 | 2,000 | 925 | 840 |
| 21 | 820 | 1,600 | 1,740 | 1,600 | 2,380 | 5,550 | 5,690 | 1,920 | 920 | 740 |
| 22 | 940 | 1,520 | 1,600 | 1,530 | 2,390 | 5,690 | 5,600 | 1,880 | 912 | 860 |
| 23 | 1,200 | 1,520 | 1,530 | 1,530 | 2,390 | 5,580 | 5,610 | 2,020 | 905 | 880 |
| 24 | 1,150 | ..... | 1,470 | 1,530 | 2,320 | 5,580 | 5,630 | 2,150 | 900 | 880 |
| 25 | 1,150 | ..... | 1,470 | 1,470 | 2,200 | 5,800 | 5,550 | 2,180 | 905 | 860 |
| 26 | 1,150 | ..... | 1,400 | 1,400 | 2,110 | 6,100 | 5,540 | 2,120 | 914 | 860 |
| 27 | 1,100 | ..... | 1,400 | 1,400 | 2,090 | 6,100 | 5,230 | 2,000 | 905 | 860 |
| 28 | 1,050 | ..... | 1,400 | 1,400 | 2,180 | 5,800 | 4,960 | 1,940 | 914 | 880 |
| 29 | 1,100 | ..... | 1,400 | ..... | 2,340 | 5,400 | 4,860 | 1,900 | 925 | 905 |
| 30 | 1,100 | ..... | 1,400 | ..... | 2,820 | 5,030 | 4,770 | ..... | 900 | 905 |
| 31 | 1,050 | ..... | ..... | ..... | 3,550 | ..... | 4,680 | ..... | 905 | ..... |

### FEATHER RIVER AT OROVILLE, CAL.

LOCATION.—In sec. 8, T. 19 N., R. 4 E., at highway bridge at Oroville, 6 miles below junction of North and Middle forks, and 30 miles above the mouth of Yuba River.

RECORDS AVAILABLE.—January 1, 1902, to September 30, 1913.

DRAINAGE AREA.—3,640 square miles.

GAGE.—United States Weather Bureau vertical staff gage in two sections on pier of highway bridge near right bank. In November, 1912, a Friez water-stage recorder was installed on right bank 200 feet below bridge at same datum as staff gage,—and these records show that the minimum state for the day occurs about 7 a. m., the time at which the Weather Bureau observations are recorded. (See fig. 1.)

CHANNEL.—Bowlders and gravel; somewhat shifting at high stages.

DISCHARGE MEASUREMENTS.—Made from car and cable 1,000 feet above bridge. At extreme low water in 1912 measurements were made from a boat about 1,000 feet below bridge.

ARTIFICIAL CONTROL.—Operation of the Big Bend plant of the Great Western Power Co. causes considerable fluctuation in stage, especially at extreme low water.

ACCURACY.—Rating curve well defined; results good. Results from water-stage recorder show that low-water discharge computed from the Weather Bureau gage readings is 10 to 15 per cent too low.

COOPERATION.—Prior to installation of recording gage the gage-height record was furnished by United States Weather Bureau, through N. R. Taylor, local forecaster.

*Discharge measurements of Feather River at Oroville, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 21 | J. E. Stewart | a 0.89 | 1,140 | Apr. 7 | Lasley Lee | 6.06 | 10,200 |
| Nov. 15 | do | a 2.64 | 2,760 | 16 | do | 5.51 | 8,160 |
| Jan. 17 | Lasley Lee | 3.84 | 4,220 | May 14 | do | 5.86 | 9,540 |
| Mar. 5 | do | 2.59 | 2,790 | | | | |

a Read on staff gage at bridge.

*Daily gage height, in feet, of Feather River at Oroville, Cal., for the year ending Sept. 30, 1913.*

[W. H. Henderson, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 0.8 | a 1.4 | 1.95 | 2.55 | 2.1 | 5.2 | 5.5 | 5.2 | 2.15 | 1.3 | 0.7 |
| 2 | .4 | .5 | a 1.4 | 1.7 | 2.55 | 2.0 | 5.7 | 5.3 | 5.1 | 2.05 | 1.25 | .7 |
| 3 | .4 | .4 | a 1.4 | 1.7 | 2.55 | 2.1 | 5.5 | 5.3 | 5.0 | 2.0 | 1.15 | .7 |
| 4 | .4 | a 1.2 | a 1.4 | 1.65 | 2.45 | 2.15 | 5.9 | 5.4 | 4.9 | 1.95 | 1.15 | .55 |
| 5 | a .8 | a .8 | a 1.3 | 1.5 | 2.4 | 2.25 | 6.4 | 5.7 | 4.7 | 1.9 | 1.1 | .45 |
| 6 | a .6 | a 4.8 | 1.1 | 1.15 | 2.3 | 2.4 | 6.3 | 6.0 | 4.6 | 1.85 | 1.05 | .4 |
| 7 | a .5 | 5.5 | 1.1 | 1.25 | 2.3 | 2.7 | 6.0 | 6.2 | 4.6 | 1.8 | 1.0 | .5 |
| 8 | a .6 | 5.5 | a 1.2 | 1.75 | 2.55 | 2.9 | 5.8 | 6.4 | 4.4 | 1.65 | 1.05 | .65 |
| 9 | a .6 | 2.9 | .9 | 1.6 | 2.45 | 3.1 | 5.8 | 7.1 | 4.3 | 1.55 | .9 | .6 |
| 10 | a .7 | 5.3 | .9 | 1.5 | 2.55 | 3.4 | 5.9 | 6.9 | 4.1 | 1.55 | .95 | .6 |
| 11 | a .6 | 3.9 | .9 | 1.4 | 2.55 | 3.7 | 6.2 | 6.4 | 3.8 | 1.5 | .9 | .65 |
| 12 | .4 | 3.3 | .9 | 1.9 | 2.55 | 3.7 | 6.4 | 6.2 | 3.6 | 1.45 | .9 | .6 |
| 13 | .5 | 2.7 | 1.0 | 3.25 | 2.55 | 3.5 | 6.6 | 5.9 | 3.4 | 1.35 | .85 | .55 |
| 14 | .1 | 2.3 | 1.1 | 4.8 | 2.6 | 3.3 | 6.4 | 5.8 | 3.25 | 1.3 | .9 | .45 |
| 15 | .1 | a 2.7 | a 2.7 | 4.8 | 2.65 | 3.1 | 6.0 | 5.8 | 3.05 | 1.3 | .9 | .6 |
| 16 | .1 | a 2.6 | 3.1 | 4.4 | 2.8 | 3.1 | 5.6 | 5.9 | 2.95 | 1.3 | .85 | .6 |
| 17 | .4 | a 2.0 | 2.8 | 4.0 | 2.95 | 3.2 | 5.4 | 6.2 | 2.75 | 1.3 | .85 | .6 |
| 18 | .4 | a 1.8 | 2.5 | 6.2 | 3.0 | 3.6 | 5.6 | 6.5 | 2.65 | 1.2 | .9 | .6 |
| 19 | .4 | a 1.5 | 2.3 | 5.4 | 2.85 | 3.7 | 5.7 | 6.6 | 2.7 | 1.15 | .8 | .6 |
| 20 | .6 | a 2.4 | 2.1 | 4.4 | 2.7 | 3.55 | 5.8 | ..... | 2.65 | 1.15 | .8 | .6 |
| 21 | a .6 | a 1.9 | 1.9 | 3.7 | 2.55 | 3.6 | 5.9 | ..... | 2.45 | 1.2 | .75 | .6 |
| 22 | .2 | a 1.9 | 1.65 | 3.3 | 2.4 | 4.5 | 6.0 | ..... | 2.3 | 1.35 | .65 | .6 |
| 23 | .7 | a 1.9 | 1.6 | 3.0 | 2.35 | 4.3 | 6.0 | ..... | 2.4 | 1.4 | .75 | .55 |
| 24 | .8 | a 1.7 | 1.55 | 2.7 | 2.5 | 3.9 | 6.1 | ..... | 2.55 | 1.5 | .75 | .5 |
| 25 | .4 | a 1.6 | 1.5 | 2.6 | 2.35 | 3.6 | 6.2 | 5.8 | 2.6 | 1.5 | .7 | ..... |
| 26 | a 1.0 | 1.5 | 1.6 | 2.55 | 2.25 | 3.35 | 6.5 | 5.9 | 2.7 | 1.5 | .7 | ..... |
| 27 | a .9 | a 1.5 | 1.45 | 2.7 | 2.25 | 3.25 | 6.7 | 5.8 | 2.8 | 1.4 | .7 | ..... |
| 28 | a .8 | 1.6 | 1.45 | 2.6 | 2.15 | 3.3 | 6.4 | 5.7 | 2.75 | 1.6 | .75 | .55 |
| 29 | a .8 | a 1.7 | 1.4 | 2.6 | ..... | 3.45 | 6.1 | 5.5 | 2.55 | 1.45 | .8 | .65 |
| 30 | a 1.1 | 1.3 | 1.7 | 2.45 | ..... | 3.95 | 5.8 | 5.4 | 2.35 | 1.5 | .8 | .6 |
| 31 | a .9 | ..... | 1.9 | 2.45 | ..... | 4.6 | ..... | 5.3 | ..... | 1.3 | .65 | ..... |

NOTE.—Daily gage heights Oct. 1 to Dec. 15, 1912, read from Weather Bureau gage, except those marked a, which represent a mean obtained by combining special readings with the regular reading; gage heights Dec. 16, 1912, to Sept. 30, 1913, taken from Friez water-stage recorder.

*Daily discharge, in second-feet, of Feather River at Oroville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 940 | 1,110 | 1,530 | 2,030 | 2,690 | 2,180 | 7,490 | 8,450 | 7,490 | 2,240 | 1,450 | 1,060 |
| 2 | 940 | 980 | 1,530 | 1,800 | 2,690 | 2,080 | 9,180 | 7,790 | 7,190 | 2,130 | 1,410 | 1,060 |
| 3 | 940 | 940 | 1,530 | 1,800 | 2,690 | 2,180 | 8,450 | 7,790 | 6,910 | 2,080 | 1,330 | 1,060 |
| 4 | 940 | 1,370 | 1,530 | 1,760 | 2,570 | 2,240 | 10,000 | 8,110 | 6,630 | 2,030 | 1,330 | 1,000 |
| 5 | 1,110 | 1,110 | 1,450 | 1,620 | 2,520 | 2,340 | 12,400 | 9,180 | 6,110 | 1,980 | 1,290 | 960 |
| 6 | 1,020 | 6,370 | 1,290 | 1,290 | 2,400 | 2,520 | 11,900 | 10,400 | 5,870 | 1,940 | 1,260 | 940 |
| 7 | 980 | 8,450 | 1,290 | 1,410 | 2,400 | 2,870 | 10,400 | 11,400 | 5,870 | 1,890 | 1,220 | 980 |
| 8 | 1,020 | 8,450 | 1,370 | 1,840 | 2,690 | 3,110 | 9,580 | 12,400 | 5,410 | 1,760 | 1,260 | 1,040 |
| 9 | 1,020 | 3,110 | 1,160 | 1,710 | 2,570 | 3,360 | 9,580 | 16,400 | 5,210 | 1,660 | 1,160 | 1,020 |
| 10 | 1,060 | 7,790 | 1,160 | 1,620 | 2,690 | 3,750 | 10,000 | 15,200 | 4,830 | 1,660 | 1,190 | 1,020 |
| 11 | 1,020 | 4,490 | 1,160 | 1,530 | 2,690 | 4,180 | 11,400 | 12,400 | 4,330 | 1,620 | 1,160 | 1,040 |
| 12 | 940 | 3,620 | 1,160 | 1,980 | 2,690 | 4,180 | 12,400 | 11,400 | 4,030 | 1,580 | 1,160 | 1,020 |
| 13 | 980 | 2,870 | 1,220 | 3,560 | 2,690 | 3,890 | 13,500 | 10,000 | 3,750 | 1,490 | 1,140 | 1,000 |
| 14 | 845 | 2,400 | 1,290 | 6,370 | 2,750 | 3,620 | 12,400 | 9,580 | 3,560 | 1,450 | 1,160 | 960 |
| 15 | 845 | 2,870 | 2,870 | 6,370 | 2,810 | 3,360 | 10,400 | 9,580 | 3,300 | 1,450 | 1,160 | 1,020 |
| 16 | 845 | 2,750 | 3,360 | 5,410 | 2,990 | 3,360 | 8,800 | 10,000 | 3,170 | 1,450 | 1,140 | 1,020 |
| 17 | 940 | 2,080 | 2,990 | 4,650 | 3,170 | 3,490 | 8,110 | 11,400 | 2,930 | 1,450 | 1,140 | 1,020 |
| 18 | 940 | 1,890 | 2,630 | 11,400 | 3,230 | 4,030 | 8,800 | 13,000 | 2,710 | 1,370 | 1,160 | 1,020 |
| 19 | 940 | 1,620 | 2,400 | 8,110 | 3,050 | 4,180 | 9,180 | 13,500 | 2,870 | 1,330 | 1,110 | 1,020 |
| 20 | 1,020 | 2,520 | 2,180 | 5,410 | 2,870 | 3,960 | 9,580 | 12,800 | 2,810 | 1,330 | 1,110 | 1,020 |
| 21 | 1,020 | 1,980 | 1,980 | 4,180 | 2,690 | 4,030 | 10,000 | 12,200 | 2,570 | 1,370 | 1,090 | 1,020 |
| 22 | 875 | 1,980 | 1,760 | 3,620 | 2,500 | 5,630 | 10,400 | 11,500 | 2,400 | 1,490 | 1,040 | 1,020 |
| 23 | 1,060 | 1,980 | 1,710 | 3,230 | 2,460 | 5,210 | 10,400 | 10,900 | 2,520 | 1,530 | 1,090 | 1,000 |
| 24 | 1,110 | 1,800 | 1,660 | 2,870 | 2,630 | 4,490 | 10,900 | 10,200 | 2,690 | 1,620 | 1,090 | 980 |
| 25 | 940 | 1,710 | 1,620 | 2,750 | 2,460 | 4,030 | 11,400 | 9,580 | 2,750 | 1,620 | 1,060 | 985 |
| 26 | 1,220 | 1,620 | 1,710 | 2,690 | 2,340 | 3,680 | 13,000 | 10,000 | 2,870 | 1,620 | 1,060 | 990 |
| 27 | 1,160 | 1,620 | 1,580 | 2,870 | 2,340 | 3,560 | 14,100 | 9,580 | 2,990 | 1,530 | 1,060 | 995 |
| 28 | 1,110 | 1,710 | 1,580 | 2,750 | 2,240 | 3,620 | 12,400 | 9,180 | 2,930 | 1,710 | 1,090 | 1,000 |
| 29 | 1,110 | 1,800 | 1,530 | 2,750 | ..... | 3,820 | 10,900 | 8,450 | 2,690 | 1,580 | 1,110 | 1,040 |
| 30 | 1,290 | 1,450 | 1,800 | 2,570 | ..... | 4,570 | 9,580 | 8,110 | 2,460 | 1,620 | 1,110 | 1,020 |
| 31 | 1,160 | ..... | 1,980 | 2,570 | ..... | 5,870 | ..... | 7,790 | ..... | 1,450 | 1,040 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. For days for which gage heights are not recorded discharge interpolated and compared with that of Middle Fork of Feather River near Oroville.

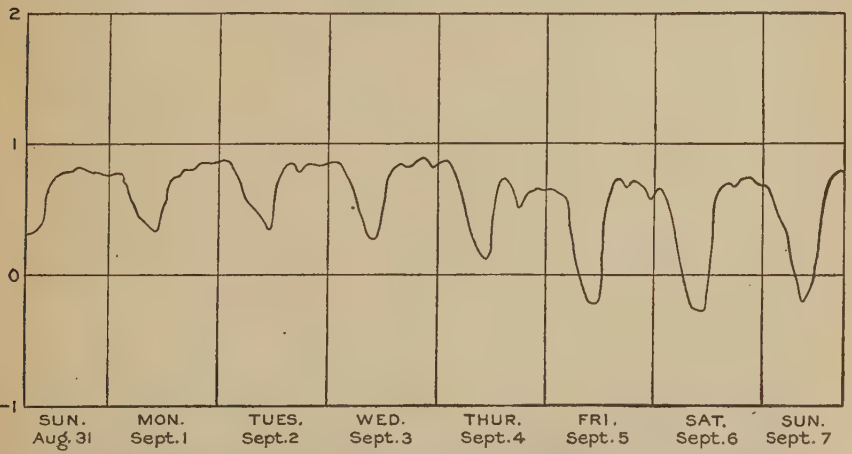


FIGURE 1.—State of Feather River at Oroville, Cal., August 31 to September 7, 1913, obtained by water-stage recorder.

*Monthly discharge of Feather River at Oroville, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 3,640 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 1,290 | 845 | 1,010 | 0.277 | 0.32 | 62,100 | B. |
| November | 8,450 | 940 | 2,810 | .772 | .86 | 167,000 | B. |
| December | 3,360 | 1,160 | 1,740 | .478 | .55 | 107,000 | B. |
| January | 11,400 | 1,290 | 3,370 | .926 | 1.07 | 207,000 | A. |
| February | 3,230 | 2,240 | 2,660 | .731 | .76 | 148,000 | A. |
| March | 5,870 | 2,080 | 3,660 | 1.01 | 1.16 | 225,000 | A. |
| April | 14,100 | 7,490 | 10,600 | 2.91 | 3.25 | 631,000 | A. |
| May | 16,400 | 7,790 | 10,600 | 2.91 | 3.36 | 652,000 | A. |
| June | 7,490 | 2,400 | 4,060 | 1.12 | 1.25 | 242,000 | A. |
| July | 2,240 | 1,330 | 1,650 | .453 | .52 | 101,000 | A. |
| August | 1,450 | 1,040 | 1,170 | .321 | .37 | 71,900 | A. |
| September | 1,060 | 940 | 1,010 | .277 | .31 | 60,100 | A. |
| The year | 16,400 | 845 | 3,690 | 1.01 | 13.78 | 2,670,000 | |

## BUTT CREEK AT BUTTE VALLEY, CAL.

LOCATION.—In Butte Valley, 100 feet below footbridge, 2 miles above junction with North Fork of Feather River, 1,000 feet above intake to Great Western Power Co.'s diversion flume, about one-fourth mile south of Butte Valley post office.

RECORDS AVAILABLE.—June 14, 1905, to September 30, 1913.

DRAINAGE AREA.—73 square miles at original station.

GAGE.—Vertical staff on left bank, installed July 19, 1912, seven-eighths mile upstream from original vertical staff which was on right bank. Gage is not influenced by low diversion dam near flume intake for Great Western Power Co.'s plant.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage.

CHANNEL.—Sand, gravel, and clay; appears permanent.

DIVERSION.—Oro Light & Power Co. diverts water from Butt Creek, above the station, into Yellow Creek watershed through Wallack ditch, which has a capacity of 15 to 20 second-feet. Owing to pending litigation with the Great Western Power Co., only a small quantity is diverted; no other diversion above station.

COOPERATION.—Station maintained and complete data furnished by Great Western Power Co., through L. P. Cornell, engineer.

*Discharge measurements of Butt Creek at Butte Valley, Cal., during the year ending Sept. 30, 1913.*

[Made by Great Western Power Co.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| June 3 | 1.94 | 100 | June 29 | 1.50 | 44 | Aug. 2 | 1.33 | 31 |
| 3 | 1.94 | 97 | 30 | 1.45 | 43 | 3 | 1.32 | 30 |
| 3 | 1.94 | 98 | 30 | 1.44 | 41 | 4 | 1.30 | 30 |
| 14 | 1.56 | 54 | July 1 | 1.42 | 39 | 4 | 1.30 | 29 |
| 14 | 1.56 | 54 | 2 | 1.40 | 38 | 25 | 1.31 | 30 |
| 14 | 1.56 | 56 | 10 | 1.32 | 31 | 25 | 1.31 | 30 |
| 18 | 1.48 | 46 | 10 | 1.32 | 31 | Sept. 5 | 1.31 | 28 |
| 18 | 1.47 | 46 | 22 | 1.39 | 34 | 5 | 1.31 | 28 |
| 28 | 1.54 | 48 | 22 | 1.40 | 35 | | | |

*Daily gage height, in feet, of Butt Creek at Butte Valley, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.33 | 1.36 | 1.43 | 1.50 | 2.19 | 1.59 | 2.72 | 2.65 | 2.03 | 1.42 | 1.32 | 1.31 |
| 2 | 1.34 | 1.38 | 1.44 | 1.50 | 1.97 | 1.54 | 2.66 | 2.52 | 1.97 | 1.40 | 1.32 | 1.32 |
| 3 | 1.33 | 1.46 | 1.42 | 1.49 | 1.87 | 1.50 | 2.44 | 2.47 | 1.94 | 1.41 | 1.32 | 1.32 |
| 4 | 1.34 | 1.47 | 1.40 | 1.50 | 1.75 | 1.55 | 2.59 | 2.60 | 1.94 | 1.42 | 1.30 | 1.32 |
| 5 | 1.33 | 1.45 | 1.38 | 1.33 | 1.64 | 1.56 | 3.02 | 2.70 | 1.89 | 1.40 | 1.30 | 1.31 |
| 6 | 1.33 | 1.98 | 1.40 | 1.40 | 1.55 | 1.59 | 2.62 | 2.85 | 1.85 | 1.38 | 1.33 | 1.31 |
| 7 | 1.34 | 2.42 | 1.42 | 1.40 | 1.50 | 1.63 | 2.50 | 2.96 | 2.01 | 1.37 | 1.33 | 1.31 |
| 8 | 1.34 | 1.68 | 1.38 | 1.51 | 1.47 | 1.72 | 2.54 | 3.00 | 1.84 | 1.36 | 1.32 | 1.30 |
| 9 | 1.34 | 1.83 | 1.37 | 1.53 | 1.49 | 1.83 | 2.69 | 3.28 | 1.78 | 1.34 | 1.31 | 1.30 |
| 10 | 1.34 | 2.22 | 1.37 | 1.56 | 1.50 | 1.95 | 2.83 | 3.33 | 1.72 | 1.32 | 1.31 | 1.30 |
| 11 | 1.34 | 1.73 | 1.37 | 1.53 | 1.50 | 1.98 | 3.10 | 3.00 | 1.67 | 1.32 | 1.32 | 1.31 |
| 12 | 1.34 | 1.62 | 1.38 | 1.58 | 1.51 | 1.91 | 3.31 | 2.86 | 1.63 | 1.32 | 1.32 | 1.31 |
| 13 | 1.34 | 1.53 | 1.44 | 1.68 | 1.52 | 1.85 | 3.49 | 2.73 | 1.59 | 1.32 | 1.32 | 1.30 |
| 14 | 1.34 | 1.58 | 1.58 | 1.75 | 1.54 | 1.75 | 3.03 | 2.58 | 1.56 | 1.31 | 1.32 | 1.30 |
| 15 | 1.34 | 1.58 | 1.62 | 1.80 | 1.55 | 1.76 | 2.67 | 2.55 | 1.54 | 1.32 | 1.32 | 1.30 |
| 16 | 1.34 | 1.52 | 1.68 | 1.86 | 1.55 | 1.78 | 2.57 | 2.60 | 1.52 | 1.31 | 1.32 | 1.30 |
| 17 | 1.34 | 1.49 | 1.60 | 2.10 | 1.61 | 1.82 | 2.65 | 2.60 | 1.50 | 1.30 | 1.32 | 1.30 |
| 18 | 1.34 | 1.47 | 1.56 | 2.40 | 1.61 | 1.15 | 2.14 | 2.79 | 1.48 | 1.30 | 1.31 | 1.30 |
| 19 | 1.34 | 1.48 | 1.54 | 2.50 | 1.67 | 1.80 | 2.89 | 2.92 | 1.42 | 1.31 | 1.30 | 1.30 |
| 20 | 1.34 | 1.50 | 1.44 | 2.47 | 1.68 | 1.82 | 3.03 | 2.65 | 1.46 | 1.32 | 1.28 | 1.30 |
| 21 | 1.34 | 1.49 | 1.38 | 2.50 | 1.64 | 1.74 | 3.32 | 2.55 | 1.45 | 1.34 | 1.29 | 1.30 |
| 22 | 1.35 | 1.47 | 1.50 | 2.54 | 1.59 | 2.15 | 3.43 | 2.56 | 1.44 | 1.40 | 1.30 | 1.30 |
| 23 | 1.52 | 1.45 | 1.67 | 2.74 | 1.49 | 1.75 | 3.26 | 2.58 | 1.54 | 1.48 | 1.30 | 1.30 |
| 24 | 1.51 | 1.45 | 1.69 | 2.55 | 1.54 | 1.65 | 3.28 | 2.60 | 1.50 | 1.44 | 1.30 | 1.29 |
| 25 | 1.40 | 1.43 | 1.63 | 2.65 | 1.52 | 1.61 | 3.47 | 2.50 | 1.53 | 1.38 | 1.31 | 1.30 |
| 26 | 1.44 | 1.44 | 1.60 | 2.46 | 1.50 | 1.58 | 3.60 | 2.45 | 1.51 | 1.39 | 1.31 | 1.30 |
| 27 | 1.39 | 1.42 | 1.68 | 2.49 | 1.46 | 1.64 | 3.70 | 2.40 | 1.68 | 1.41 | 1.30 | 1.30 |
| 28 | 1.38 | 1.43 | 1.57 | 2.24 | 1.53 | 1.70 | 3.28 | 2.42 | 1.54 | 1.41 | 1.46 | 1.30 |
| 29 | 1.39 | 1.40 | 1.53 | 2.53 | ..... | 1.81 | 3.05 | 2.23 | 1.50 | 1.37 | 1.38 | 1.30 |
| 30 | 1.38 | 1.42 | 1.55 | 2.22 | ..... | 2.05 | 2.79 | 2.12 | 1.45 | 1.38 | 1.34 | 1.30 |
| 31 | 1.36 | ..... | 1.54 | 2.24 | ..... | 2.34 | ..... | 2.10 | ..... | 1.31 | 1.33 | ..... |

*Daily discharge, in second-feet, of Butt Creek at Butte Valley, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32 | 35 | 42 | 50 | 124 | 59 | 180 | 173 | 107 | 41 | 31 | 30 |
| 2 | 33 | 37 | 43 | 50 | 100 | 54 | 174 | 259 | 99 | 39 | 31 | 31 |
| 3 | 32 | 46 | 41 | 49 | 89 | 50 | 150 | 154 | 96 | 40 | 31 | 31 |
| 4 | 33 | 46 | 39 | 50 | 76 | 55 | 166 | 167 | 96 | 41 | 29 | 31 |
| 5 | 32 | 44 | 37 | 32 | 65 | 56 | 212 | 178 | 91 | 39 | 29 | 30 |
| 6 | 32 | 101 | 37 | 39 | 55 | 59 | 170 | 194 | 86 | 37 | 32 | 30 |
| 7 | 33 | 148 | 41 | 39 | 50 | 64 | 157 | 206 | 104 | 36 | 32 | 30 |
| 8 | 33 | 69 | 37 | 51 | 46 | 73 | 161 | 210 | 84 | 35 | 31 | 29 |
| 9 | 33 | 85 | 36 | 53 | 49 | 85 | 177 | 240 | 78 | 33 | 30 | 29 |
| 10 | 33 | 127 | 36 | 56 | 50 | 98 | 192 | 246 | 71 | 31 | 30 | 29 |
| 11 | 33 | 74 | 35 | 53 | 50 | 101 | 221 | 210 | 65 | 31 | 31 | 30 |
| 12 | 33 | 63 | 37 | 58 | 51 | 94 | 243 | 195 | 62 | 31 | 31 | 30 |
| 13 | 33 | 53 | 43 | 69 | 52 | 87 | 263 | 181 | 57 | 31 | 31 | 29 |
| 14 | 33 | 58 | 58 | 76 | 54 | 76 | 213 | 165 | 54 | 30 | 31 | 29 |
| 15 | 33 | 58 | 63 | 82 | 55 | 78 | 175 | 162 | 52 | 31 | 31 | 29 |
| 16 | 33 | 52 | 69 | 88 | 55 | 80 | 164 | 167 | 49 | 30 | 31 | 29 |
| 17 | 33 | 49 | 60 | 114 | 62 | 84 | 173 | 167 | 48 | 29 | 31 | 29 |
| 18 | 33 | 46 | 56 | 146 | 62 | 87 | 225 | 188 | 46 | 29 | 30 | 29 |
| 19 | 33 | 48 | 54 | 157 | 68 | 82 | 198 | 202 | 40 | 30 | 29 | 29 |
| 20 | 33 | 50 | 43 | 154 | 69 | 84 | 213 | 173 | 44 | 31 | 26 | 29 |
| 21 | 33 | 49 | 37 | 157 | 65 | 75 | 244 | 162 | 43 | 33 | 27 | 29 |
| 22 | 34 | 46 | 50 | 161 | 59 | 119 | 256 | 163 | 42 | 39 | 29 | 29 |
| 23 | 53 | 44 | 68 | 182 | 49 | 76 | 238 | 165 | 52 | 48 | 29 | 29 |
| 24 | 51 | 44 | 70 | 162 | 54 | 66 | 240 | 167 | 48 | 44 | 29 | 27 |
| 25 | 39 | 42 | 64 | 173 | 52 | 62 | 261 | 157 | 51 | 37 | 30 | 29 |
| 26 | 43 | 43 | 60 | 152 | 50 | 58 | 274 | 151 | 49 | 38 | 30 | 29 |
| 27 | 38 | 41 | 69 | 156 | 46 | 65 | 285 | 146 | 66 | 40 | 29 | 29 |
| 28 | 37 | 42 | 57 | 129 | 53 | 71 | 240 | 148 | 52 | 40 | 45 | 29 |
| 29 | 38 | 39 | 53 | 128 | ..... | 83 | 216 | 128 | 48 | 36 | 37 | 29 |
| 30 | 37 | 41 | 55 | 127 | ..... | 109 | 188 | 116 | 43 | 37 | 33 | 29 |
| 31 | 35 | ..... | 54 | 129 | ..... | 140 | ..... | 114 | ..... | 30 | 32 | ..... |

*Monthly discharge of Butt Creek at Butte Valley, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 53 | 32 | 35.3 | 2,170 |
| November | 148 | 35 | 57.3 | 3,410 |
| December | 70 | 35 | 49.8 | 3,060 |
| January | 182 | 32 | 101 | 6,210 |
| February | 124 | 46 | 61.1 | 3,390 |
| March | 140 | 50 | 78.4 | 4,820 |
| April | 285 | 150 | 209 | 12,400 |
| May | 259 | 114 | 176 | 10,800 |
| June | 107 | 40 | 64.1 | 3,810 |
| July | 48 | 29 | 35.4 | 2,180 |
| August | 45 | 26 | 30.9 | 1,900 |
| September | 31 | 29 | 29.3 | 1,740 |
| The year | 285 | 26 | 77.3 | 55,900 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### INDIAN CREEK NEAR CRESCENT MILLS, CAL.

LOCATION.—In the SW. ¼ sec. 25, T. 26 N., R. 9 E., at the lower end of Indian Valley, about 2,000 feet below Arlington Bridge, and 1¼ miles below Crescent Mills. Spanish Creek enters 4 miles below the station.

RECORDS AVAILABLE.—January 1, 1906, to December 31, 1909, and September 10, 1911, to September 30, 1913.

DRAINAGE AREA.—740 square miles.

GAGE.—Vertical staff in three sections on right bank near observer's house.

CHANNEL.—Fairly permanent. At low stages water is deep and sluggish at gage.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet below gage or by wading.

DIVERSIONS.—Water is diverted from Indian Creek for irrigation in Indian and Genesee valleys.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of Indian Creek near Crescent Mills, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. |
|---|---|---|
| | *Feet.* | *Sec.-ft.* |
| Apr. 3 | 4.84 | 1,070 |
| May 15 | 3.92 | 561 |
| June 4 | 3.00 | 286 |

*Daily gage height, in feet, of Indian Creek near Crescent Mills, Cal., for the year ending Sept. 30, 1913.*

[Eugene Cook, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15 | 1.48 | 1.75 | 1.90 | 2.2 | 2.2 | 4.8 | 4.4 | 3.3 | 1.70 | 1.80 | 1.10 |
| 2 | 1.15 | 1.48 | 1.75 | 1.85 | 2.25 | 2.25 | 5.2 | 4.2 | 3.2 | 1.65 | 1.75 | 1.10 |
| 3 | 1.18 | 1.50 | 1.72 | 1.80 | 2.25 | 2.4 | 4.8 | 4.0 | 3.0 | 1.60 | 1.70 | 1.10 |
| 4 | 1.18 | 1.50 | 1.72 | 1.78 | 2.25 | 2.6 | 4.5 | 4.0 | 3.0 | 1.60 | 1.60 | 1.10 |
| 5 | 1.20 | 1.50 | 1.70 | 1.70 | 2.25 | 2.7 | 5.3 | 4.2 | 3.1 | 1.60 | 1.60 | 1.10 |
| 6 | 1.20 | 2.25 | 1.68 | 1.65 | 2.3 | 2.9 | 5.5 | 4.4 | 3.4 | 1.60 | 1.55 | 1.12 |
| 7 | 1.20 | 2.5 | 1.65 | 1.60 | 2.3 | 3.0 | 5.0 | 4.5 | 3.6 | 1.60 | 1.50 | 1.12 |
| 8 | 1.20 | 2.6 | 1.65 | 1.60 | 2.35 | 3.0 | 4.7 | 4.5 | 3.4 | 1.58 | 1.45 | 1.12 |
| 9 | 1.22 | 2.8 | 1.65 | 1.60 | 2.4 | 3.2 | 4.8 | 4.5 | 3.2 | 1.55 | 1.40 | 1.12 |
| 10 | 1.22 | 2.9 | 1.65 | 1.60 | 2.45 | 3.3 | 5.0 | 4.5 | 3.0 | 1.55 | 1.30 | 1.15 |
| 11 | 1.22 | 2.5 | 1.65 | 1.60 | 2.5 | 3.5 | 5.4 | 4.4 | 2.8 | 1.50 | 1.25 | 1.15 |
| 12 | 1.25 | 2.3 | 1.68 | 1.65 | 2.5 | 3.4 | 5.5 | 4.4 | 2.6 | 1.48 | 1.20 | 1.15 |
| 13 | 1.25 | 2.15 | 1.70 | 1.80 | 2.6 | 3.2 | 5.7 | 4.2 | 2.4 | 1.40 | 1.15 | 1.15 |
| 14 | 1.25 | 2.05 | 1.80 | 2.0 | 2.6 | 3.1 | 5.2 | 4.0 | 2.3 | 1.35 | 1.10 | 1.15 |
| 15 | 1.25 | 2.0 | 2.7 | 2.0 | 2.8 | 3.0 | 4.7 | 3.9 | 2.3 | 1.30 | 1.05 | 1.15 |
| 16 | 1.25 | 1.98 | 2.6 | 2.0 | 2.9 | 2.9 | 4.5 | 4.0 | 2.3 | 1.30 | 1.00 | 1.15 |
| 17 | 1.28 | 1.95 | 2.3 | 2.0 | 3.0 | 2.9 | 4.4 | 4.1 | 2.3 | 1.25 | 1.00 | 1.15 |
| 18 | 1.28 | 1.95 | 2.2 | 2.45 | 2.9 | 3.1 | 4.5 | 4.5 | 2.3 | 1.20 | 1.00 | 1.15 |
| 19 | 1.28 | 1.95 | 2.1 | 2.8 | 2.8 | 3.1 | 4.7 | 4.5 | 2.3 | 1.20 | 1.00 | 1.15 |
| 20 | 1.28 | 2.1 | 2.0 | 2.8 | 2.7 | 3.0 | 4.6 | 4.4 | 2.3 | 1.20 | 1.00 | 1.15 |
| 21 | 1.30 | 2.0 | 1.90 | 2.7 | 2.6 | 3.0 | 4.5 | 4.4 | 2.3 | 1.40 | 1.00 | 1.12 |
| 22 | 1.30 | 1.95 | 1.88 | 2.6 | 2.45 | 3.1 | 4.7 | 4.3 | 2.3 | 1.50 | 1.00 | 1.12 |
| 23 | 1.35 | 1.90 | 1.85 | 2.45 | 2.4 | 3.1 | 4.7 | 4.2 | 2.3 | 1.80 | 1.00 | 1.10 |
| 24 | 1.40 | 1.85 | 1.82 | 2.4 | 2.4 | 3.0 | 4.6 | 4.1 | 2.3 | 2.2 | 1.00 | 1.10 |
| 25 | 1.40 | 1.80 | 1.80 | 2.35 | 2.4 | 2.9 | 4.7 | 3.9 | 2.15 | 2.15 | 1.02 | 1.10 |
| 26 | 1.40 | 1.80 | 1.80 | 2.3 | 2.4 | 2.8 | 4.8 | 3.7 | 2.05 | 2.0 | 1.05 | 1.10 |
| 27 | 1.45 | 1.80 | 1.75 | 2.3 | 2.35 | 2.8 | 4.7 | 3.6 | 2.0 | 1.95 | 1.08 | 1.10 |
| 28 | 1.48 | 1.78 | 1.70 | 2.3 | 2.3 | 2.9 | 4.6 | 3.6 | 1.98 | 1.95 | 1.10 | 1.12 |
| 29 | 1.48 | 1.78 | 1.75 | 2.25 | ..... | 2.9 | 4.5 | 3.7 | 1.90 | 1.90 | 1.10 | 1.12 |
| 30 | 1.48 | 1.78 | 1.85 | 2.2 | ..... | 3.3 | 4.5 | 3.5 | 1.80 | 1.85 | 1.10 | 1.15 |
| 31 | 1.48 | ..... | 1.90 | 2.2 | ..... | 4.2 | ..... | 3.4 | ..... | 1.80 | 1.10 | ..... |

*Daily discharge, in second-feet, of Indian Creek near Crescent Mills, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 59 | 21 | 50 |
| 2 | ..... | 12 | 59 | 22 | 50 |
| 3 | ..... | 13 | 59 | 23 | 50 |
| 4 | ..... | 14 | 59 | 24 | 56 |
| 5 | ..... | 15 | 56 | 25 | 56 |
| 6 | ..... | 16 | 56 | 26 | 61 |
| 7 | ..... | 17 | 56 | 27 | 66 |
| 8 | ..... | 18 | 56 | 28 | 66 |
| 9 | ..... | 19 | 50 | 29 | 66 |
| 10 | 59 | 20 | 50 | 30 | 66 |
| | | | | 31 | ..... |

*Daily gage height, in feet, of Indian Creek near Crescent Mills, Cal., during the year ending Sept. 10, 1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 66 | 84 | 120 | 102 | 166 | 152 | 288 | 695 | 388 | 90 | 20 | 13 |
| 2 | 66 | 84 | 120 | 102 | 159 | 166 | 310 | 805 | 388 | 90 | 20 | 13 |
| 3 | 66 | 84 | 120 | 102 | 159 | 159 | 334 | 695 | 360 | 84 | 20 | 20 |
| 4 | 72 | 84 | 120 | 102 | 152 | 159 | 334 | 695 | 334 | 84 | 20 | 27 |
| 5 | 78 | 84 | 120 | 102 | 152 | 250 | 310 | 750 | 288 | 78 | 16 | 36 |
| 6 | 84 | 84 | 120 | 102 | 152 | 388 | 310 | 750 | 288 | 72 | 16 | 45 |
| 7 | 84 | 90 | 120 | 108 | 152 | 450 | 310 | 805 | 268 | 72 | 16 | 50 |
| 8 | 84 | 96 | 120 | 126 | 152 | 334 | 334 | 805 | 232 | 66 | 16 | 56 |
| 9 | 84 | 96 | 120 | 152 | 152 | 268 | 334 | 805 | 216 | 56 | 16 | 50 |
| 10 | 78 | 133 | 114 | 166 | 159 | 250 | 334 | 805 | 200 | 45 | 16 | 45 |
| 11 | 78 | 133 | 114 | 186 | 172 | 232 | 310 | 695 | 186 | 36 | 16 | 45 |
| 12 | 78 | 126 | 114 | 193 | 172 | 232 | 288 | 695 | 172 | 31 | 16 | 45 |
| 13 | 78 | 126 | 108 | 216 | 172 | 232 | 250 | 695 | 159 | 31 | 16 | 45 |
| 14 | 78 | 133 | 108 | 193 | 172 | 216 | 250 | 600 | 146 | 31 | 16 | 40 |
| 15 | 78 | 146 | 108 | 179 | 172 | 216 | 232 | 560 | 133 | 31 | 16 | 40 |
| 16 | 78 | 152 | 108 | 179 | 172 | 250 | 232 | 520 | 120 | 31 | 16 | 40 |
| 17 | 78 | 159 | 108 | 172 | 172 | 250 | 232 | 484 | 108 | 31 | 13 | 40 |
| 18 | 78 | 159 | 108 | 172 | 288 | 250 | 232 | 450 | 96 | 31 | 13 | 36 |
| 19 | 78 | 152 | 108 | 172 | 288 | 250 | 232 | 418 | 96 | 31 | 13 | 36 |
| 20 | 78 | 146 | 108 | 172 | 232 | 268 | 216 | 484 | 90 | 31 | 13 | 36 |
| 21 | 78 | 140 | 108 | 159 | 216 | 250 | 216 | 520 | 96 | 31 | 13 | 36 |
| 22 | 78 | 133 | 108 | 146 | 193 | 232 | 216 | 520 | 96 | 31 | 13 | 36 |
| 23 | 78 | 133 | 108 | 140 | 172 | 216 | 216 | 484 | 120 | 31 | 13 | 38 |
| 24 | 78 | 133 | 102 | 140 | 159 | 216 | 232 | 450 | 120 | 31 | 13 | 38 |
| 25 | 78 | 126 | 102 | 146 | 152 | 232 | 250 | 450 | 120 | 31 | 13 | 36 |
| 26 | 78 | 126 | 102 | 310 | 146 | 250 | 250 | 450 | 114 | 27 | 13 | 36 |
| 27 | 78 | 120 | 102 | 288 | 146 | 268 | 268 | 450 | 108 | 27 | 13 | 36 |
| 28 | 78 | 120 | 102 | 216 | 146 | 288 | 288 | 450 | 96 | 27 | 13 | 36 |
| 29 | 84 | 120 | 102 | 200 | 146 | 334 | 388 | 450 | 96 | 23 | 13 | 36 |
| 30 | 84 | 120 | 102 | 179 | ..... | 334 | 520 | 450 | 96 | 23 | 13 | 36 |
| 31 | 84 | ..... | 102 | 172 | ..... | 310 | ..... | 418 | ..... | 20 | 13 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 36 | 70 | 102 | 120 | 159 | 159 | 1,060 | 805 | 360 | 96 | 108 | 31 |
| 2 | 36 | 70 | 102 | 114 | 166 | 166 | 1,340 | 695 | 334 | 90 | 102 | 31 |
| 3 | 38 | 72 | 98 | 108 | 166 | 186 | 1,060 | 600 | 288 | 84 | 96 | 31 |
| 4 | 38 | 72 | 98 | 106 | 166 | 216 | 865 | 600 | 288 | 84 | 84 | 31 |
| 5 | 40 | 72 | 96 | 96 | 166 | 232 | 1,420 | 695 | 310 | 84 | 84 | 31 |
| 6 | 40 | 166 | 94 | 90 | 172 | 268 | 1,560 | 805 | 388 | 84 | 78 | 33 |
| 7 | 40 | 200 | 90 | 84 | 172 | 288 | 1,200 | 865 | 450 | 84 | 72 | 33 |
| 8 | 40 | 216 | 90 | 84 | 179 | 288 | 995 | 865 | 388 | 82 | 66 | 33 |
| 9 | 42 | 250 | 90 | 84 | 186 | 334 | 1,060 | 865 | 334 | 78 | 61 | 33 |
| 10 | 42 | 268 | 90 | 84 | 193 | 360 | 1,200 | 865 | 288 | 78 | 50 | 36 |
| 11 | 42 | 200 | 90 | 84 | 200 | 418 | 1,490 | 805 | 250 | 72 | 45 | 36 |
| 12 | 45 | 172 | 94 | 90 | 200 | 388 | 1,560 | 805 | 216 | 70 | 40 | 36 |
| 13 | 45 | 152 | 96 | 108 | 216 | 334 | 1,720 | 695 | 186 | 61 | 36 | 36 |
| 14 | 45 | 140 | 108 | 133 | 216 | 310 | 1,340 | 600 | 172 | 56 | 31 | 36 |
| 15 | 45 | 133 | 232 | 133 | 250 | 288 | 995 | 560 | 172 | 50 | 27 | 36 |
| 16 | 45 | 130 | 216 | 133 | 268 | 268 | 865 | 600 | 172 | 50 | 23 | 36 |
| 17 | 48 | 126 | 172 | 133 | 288 | 268 | 805 | 645 | 172 | 45 | 23 | 36 |
| 18 | 48 | 126 | 159 | 193 | 268 | 310 | 865 | 865 | 172 | 40 | 23 | 36 |
| 19 | 48 | 126 | 146 | 250 | 250 | 310 | 995 | 865 | 172 | 40 | 23 | 36 |
| 20 | 48 | 146 | 133 | 250 | 232 | 288 | 930 | 805 | 172 | 40 | 23 | 36 |
| 21 | 50 | 133 | 120 | 232 | 216 | 288 | 865 | 805 | 172 | 61 | 23 | 33 |
| 22 | 50 | 126 | 118 | 216 | 193 | 310 | 995 | 750 | 172 | 72 | 23 | 33 |
| 23 | 56 | 120 | 114 | 193 | 186 | 310 | 995 | 695 | 172 | 108 | 23 | 31 |
| 24 | 61 | 114 | 110 | 186 | 186 | 288 | 930 | 645 | 172 | 159 | 23 | 31 |
| 25 | 61 | 108 | 108 | 179 | 186 | 268 | 995 | 560 | 152 | 152 | 25 | 31 |
| 26 | 61 | 108 | 108 | 172 | 186 | 250 | 1,060 | 484 | 140 | 133 | 27 | 31 |
| 27 | 66 | 108 | 102 | 172 | 179 | 250 | 995 | 450 | 133 | 126 | 29 | 31 |
| 28 | 70 | 106 | 96 | 172 | 172 | 268 | 930 | 450 | 130 | 126 | 31 | 33 |
| 29 | 70 | 106 | 102 | 166 | ..... | 268 | 865 | 484 | 120 | 120 | 31 | 33 |
| 30 | 70 | 106 | 114 | 159 | ..... | 360 | 865 | 418 | 108 | 114 | 31 | 36 |
| 31 | 70 | ..... | 120 | 159 | ..... | 695 | ..... | 388 | ..... | 108 | 31 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.
Figures for 1911, published herewith, supersede those published in Water Supply Paper 311, page 171, and Water Supply Paper 298, page 237.

*Monthly discharge of Indian Creek near Crescent Mills, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 10–30 | 66 | 50 | 57.4 | 2,390 | B. |
| 1911–12. | | | | | |
| October | 84 | 66 | 78.0 | 4,800 | B. |
| November | 159 | 84 | 121 | 7,200 | B. |
| December | 120 | 102 | 111 | 6,820 | B. |
| January | 310 | 102 | 164 | 10,100 | B. |
| February | 288 | 146 | 174 | 10,000 | B. |
| March | 450 | 152 | 255 | 15,700 | A. |
| April | 520 | 216 | 284 | 16,900 | A. |
| May | 805 | 418 | 590 | 36,300 | A. |
| June | 388 | 90 | 178 | 10,600 | B. |
| July | 90 | 20 | 43.7 | 2,690 | C. |
| August | 20 | 13 | 15.1 | 928 | C. |
| September | 56 | 13 | 37.3 | 2,220 | C. |
| The year | 805 | 13 | 171 | 124,000 | |
| 1912–13. | | | | | |
| October | 70 | 36 | 49.5 | 3,040 | B. |
| November | 268 | 70 | 135 | 8,030 | B. |
| December | 232 | 90 | 116 | 7,130 | B. |
| January | 250 | 84 | 145 | 8,920 | B. |
| February | 288 | 159 | 201 | 11,200 | B. |
| March | 695 | 159 | 298 | 18,300 | A. |
| April | 1,720 | 805 | 1,090 | 64,900 | A. |
| May | 865 | 388 | 679 | 41,800 | A. |
| June | 450 | 108 | 225 | 13,400 | A. |
| July | 159 | 40 | 85.4 | 5,250 | B. |
| August | 108 | 23 | 44.9 | 2,760 | C. |
| September | 36 | 31 | 33.5 | 1,990 | C. |
| The year | 1,720 | 23 | 258 | 187,000 | |

NOTE.—See footnote to table of daily discharge.

### SPANISH CREEK AT KEDDIE, CAL.

LOCATION.—In the SW. ¼ sec. 22, T. 25 N., R. 9 E., at highway bridge at Keddie, 2 miles above junction with Indian Creek.

RECORDS AVAILABLE.—October 22, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—High-water section painted on left abutment of bridge. A vertical section for low water is fastened to a stump on left bank 20 feet below bridge.

CHANNEL.—Gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Water is diverted from Spanish Creek for irrigation in American Valley.

ACCURACY.—Rating curve well defined; results good.

The following discharge measurement was made by Lasley Lee: April 4, 1913: Gage height, 3.49 feet; discharge 508 second-feet.

*Daily gage height, in feet, of Spanish Creek at Keddie, Cal., for the year ending Sept. 30, 1913.*

[R. F. Koonter, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.50 | 1.60 | 1.66 | 1.78 | 2.00 | 1.85 | 3.4 | 3.0 | 2.7 | 1.80 | 1.48 | 1.4 |
| 2 | 1.50 | 1.60 | 1.65 | 1.75 | 2.00 | 1.95 | 3.5 | 3.1 | 2.7 | 1.80 | 1.48 | 1.35 |
| 3 | 1.50 | 1.60 | 1.62 | 1.70 | 2.10 | 2.00 | 3.2 | 3.05 | 2.5 | 1.78 | 1.48 | 1.4 |
| 4 | 1.50 | 1.65 | 1.60 | 1.60 | 1.95 | 2.15 | 3.5 | 3.1 | 2.5 | 1.75 | 1.48 | 1.35 |
| 5 | 1.50 | 1.75 | 1.55 | 1.65 | 2.00 | 2.30 | 4.2 | 3.2 | 2.5 | 1.75 | 1.48 | 1.4 |
| 6 | 1.50 | 1.90 | 1.52 | 1.80 | 2.00 | 2.40 | 3.8 | 3.3 | 2.45 | 1.70 | 1.48 | 1.35 |
| 7 | 1.51 | 2.40 | 1.65 | 2.00 | 2.00 | 2.5 | 3.4 | 3.4 | 2.75 | 1.70 | 1.48 | 1.3 |
| 8 | 1.52 | 1.90 | 1.60 | 1.90 | 2.05 | 2.65 | 3.35 | 3.4 | 2.7 | 1.66 | 1.48 | 1.35 |
| 9 | 1.52 | 1.90 | 1.55 | 1.95 | 2.10 | 2.6 | 3.25 | 4.0 | 2.55 | 1.64 | 1.48 | 1.4 |
| 10 | 1.51 | 2.7 | 1.60 | 2.00 | 2.15 | 2.8 | 3.25 | 3.8 | 2.40 | 1.60 | 1.48 | 1.35 |
| 11 | 1.50 | 2.20 | 1.65 | 2.05 | 2.15 | 2.85 | 3.5 | 3.7 | 2.10 | 1.60 | ..... | 1.35 |
| 12 | 1.51 | 1.92 | 1.65 | 1.95 | 2.15 | 2.65 | 3.5 | 3.5 | 2.05 | 1.58 | ..... | 1.4 |
| 13 | 1.50 | 1.90 | 1.70 | 1.90 | 2.10 | 2.65 | 3.8 | 3.3 | 2.03 | 1.56 | ..... | 1.35 |
| 14 | 1.50 | 1.88 | 1.80 | 2.10 | 2.15 | 2.5 | 3.5 | 3.0 | 2.00 | 1.54 | ..... | 1.35 |
| 15 | 1.50 | 1.83 | 2.7 | 2.00 | 2.25 | 2.40 | 3.25 | 3.0 | 1.98 | 1.50 | ..... | 1.4 |
| 16 | 1.49 | 1.80 | 2.20 | 2.00 | 2.40 | 2.35 | 3.0 | 2.9 | 1.98 | 1.48 | ..... | 1.4 |
| 17 | 1.49 | 1.80 | 2.15 | 2.10 | 2.40 | 2.40 | 2.9 | 2.75 | 1.95 | 1.46 | ..... | 1.35 |
| 18 | 1.48 | 1.82 | 2.05 | 3.0 | 2.30 | 2.5 | 3.5 | 3.0 | 1.95 | 1.45 | ..... | 1.3 |
| 19 | 1.48 | 1.98 | 2.00 | 2.9 | 2.25 | 2.7 | 3.4 | 3.3 | 1.90 | 1.45 | ..... | 1.3 |
| 20 | 1.48 | 2.00 | 1.95 | 2.6 | 2.00 | 2.6 | 3.4 | 3.1 | 1.86 | 1.42 | ..... | 1.25 |
| 21 | 1.49 | 1.90 | 1.95 | 2.30 | 2.05 | 2.45 | 3.5 | 3.05 | 1.85 | 1.42 | ..... | 1.25 |
| 22 | 1.60 | 1.80 | 1.90 | 2.20 | 1.85 | 2.5 | 3.45 | 3.0 | 1.82 | 1.40 | ..... | 1.25 |
| 23 | 1.80 | 1.80 | 1.86 | 2.15 | 2.00 | 2.5 | 3.4 | 3.0 | 1.82 | 1.70 | ..... | 1.25 |
| 24 | 1.60 | 1.78 | 1.86 | 2.10 | 2.00 | 2.42 | 3.35 | 3.0 | 1.80 | 1.68 | ..... | 1.25 |
| 25 | 1.60 | 1.78 | 1.85 | 2.06 | 2.00 | 2.36 | 3.5 | 2.9 | 1.80 | 1.65 | ..... | 1.3 |
| 26 | 1.60 | 1.75 | 1.85 | 2.00 | 1.95 | 2.28 | 3.45 | 2.9 | 1.80 | 1.65 | ..... | 1.3 |
| 27 | 1.60 | 1.75 | 1.80 | 1.90 | 2.00 | 2.47 | 3.45 | 2.85 | 1.80 | 1.60 | ..... | 1.3 |
| 28 | 1.62 | 1.70 | 1.70 | 1.92 | 1.95 | 2.6 | 3.4 | 2.85 | 1.80 | 1.54 | ..... | 1.3 |
| 29 | 1.60 | 1.70 | 1.80 | 1.94 | ..... | 2.7 | 3.3 | 2.85 | 1.82 | 1.52 | ..... | 1.3 |
| 30 | 1.60 | 1.66 | 1.80 | 1.98 | ..... | 2.8 | 3.2 | 2.85 | 1.80 | 1.50 | ..... | 1.35 |
| 31 | 1.60 | ..... | 1.85 | 2.00 | ..... | 3.1 | ..... | 2.8 | ..... | 1.50 | ..... | ..... |

*Daily discharge, in second-feet, of Spanish Creek at Keddie, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 45 | 56 | 63 | 78 | 107 | 86 | 468 | 333 | 246 | 80 | 43 | 34 |
| 2 | 45 | 56 | 62 | 74 | 107 | 100 | 505 | 365 | 246 | 80 | 43 | 30 |
| 3 | 45 | 56 | 58 | 68 | 122 | 107 | 398 | 349 | 198 | 78 | 43 | 34 |
| 4 | 45 | 61 | 56 | 56 | 100 | 130 | 505 | 365 | 198 | 74 | 43 | 30 |
| 5 | 45 | 74 | 50 | 62 | 107 | 156 | 805 | 398 | 198 | 74 | 43 | 34 |
| 6 | 45 | 93 | 47 | 80 | 107 | 176 | 627 | 432 | 187 | 68 | 43 | 30 |
| 7 | 46 | 176 | 62 | 107 | 107 | 198 | 468 | 468 | 260 | 68 | 43 | 26 |
| 8 | 47 | 93 | 56 | 93 | 114 | 234 | 450 | 468 | 246 | 63 | 43 | 30 |
| 9 | 47 | 93 | 50 | 100 | 122 | 221 | 415 | 715 | 210 | 61 | 43 | 34 |
| 10 | 46 | 246 | 56 | 107 | 130 | 273 | 415 | 627 | 176 | 56 | 43 | 30 |
| 11 | 45 | 138 | 62 | 114 | 130 | 288 | 505 | 585 | 122 | 56 | ..... | 30 |
| 12 | 46 | 96 | 62 | 100 | 130 | 234 | 505 | 505 | 114 | 54 | ..... | 34 |
| 13 | 45 | 93 | 68 | 93 | 122 | 234 | 627 | 432 | 110 | 52 | ..... | 30 |
| 14 | 45 | 90 | 80 | 122 | 130 | 198 | 505 | 333 | 107 | 49 | ..... | 30 |
| 15 | 45 | 84 | 246 | 107 | 147 | 176 | 415 | 333 | 104 | 45 | ..... | 34 |
| 16 | 44 | 80 | 138 | 107 | 176 | 166 | 333 | 302 | 104 | 43 | ..... | 34 |
| 17 | 44 | 80 | 130 | 122 | 176 | 176 | 302 | 260 | 100 | 41 | ..... | 30 |
| 18 | 43 | 83 | 114 | 333 | 156 | 198 | 505 | 333 | 100 | 40 | ..... | 26 |
| 19 | 43 | 104 | 107 | 302 | 147 | 246 | 468 | 432 | 93 | 40 | ..... | 26 |
| 20 | 43 | 107 | 100 | 221 | 107 | 221 | 468 | 365 | 88 | 36 | ..... | 22 |
| 21 | 44 | 93 | 100 | 156 | 114 | 187 | 505 | 349 | 86 | 36 | ..... | 22 |
| 22 | 56 | 80 | 93 | 138 | 86 | 198 | 486 | 333 | 83 | 34 | ..... | 22 |
| 23 | 80 | 80 | 88 | 130 | 107 | 198 | 468 | 333 | 83 | 68 | ..... | 22 |
| 24 | 56 | 78 | 88 | 122 | 107 | 180 | 450 | 333 | 80 | 66 | ..... | 22 |
| 25 | 56 | 78 | 86 | 116 | 107 | 168 | 505 | 302 | 80 | 62 | ..... | 26 |
| 26 | 56 | 74 | 86 | 107 | 100 | 152 | 486 | 302 | 80 | 62 | ..... | 26 |
| 27 | 56 | 74 | 80 | 93 | 107 | 191 | 486 | 288 | 80 | 56 | ..... | 26 |
| 28 | 58 | 68 | 68 | 96 | 100 | 221 | 468 | 288 | 80 | 49 | ..... | 26 |
| 29 | 56 | 68 | 80 | 99 | ..... | 246 | 432 | 288 | 83 | 47 | ..... | 26 |
| 30 | 56 | 63 | 80 | 104 | ..... | 273 | 398 | 288 | 80 | 45 | ..... | 30 |
| 31 | 56 | ..... | 86 | 107 | ..... | 365 | ..... | 273 | ..... | 45 | ..... | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of Spanish Creek at Keddie, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 80 | 43 | 49.3 | 3,030 | B. |
| November | 246 | 56 | 90.5 | 5,380 | B. |
| December | 246 | 47 | 83.9 | 5,160 | B. |
| January | 333 | 56 | 120 | 7,380 | B. |
| February | 176 | 86 | 120 | 6,660 | B. |
| March | 365 | 86 | 200 | 12,300 | A. |
| April | 805 | 302 | 479 | 28,500 | A. |
| May | 715 | 260 | 380 | 23,400 | A. |
| June | 260 | 80 | 134 | 7,970 | A. |
| July | 80 | 34 | 55.7 | 3,420 | B. |
| August | ..... | ..... | [a] 47 | 2,900 | |
| September | 34 | 22 | 28.5 | 1,700 | C. |
| The year | 805 | 22 | 149 | 108,000 | |

[a] Estimated by comparison with Middle Fork of Feather River near Cromberg, Cal.

### MIDDLE FORK OF FEATHER RIVER AT CROMBERG, CAL.

LOCATION.—In the N. ½ sec. 24, T. 23 N., R. 11 E., in Plumas National Forest at California White Pine Co.'s log chute, 600 feet southwest of post office at Cromberg. Jamison Creek enters 4 miles above and Jackson Creek half a mile below the station.

RECORD AVAILABLE.—November 3, 1910, to September 30, 1913 (not complete).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream end of pier of log chute, near left bank.

CHANNEL.—Gravel and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet above gage or by wading.

ACCURACY.—Rating curve fairly well defined for low and medium stages; results, except for high water, are good for periods for which gage heights are recorded.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Middle Fork of Feather River at Cromberg, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Apr. 2 | 5.38 | 1,430 | May 16 | 3.93 | 560 | June 5 | 3.62 | 411 |
| | 5.29 | 1,360 | 16 | 3.90 | 536 | | | |

*Daily gage height, in feet, of Middle Fork of Feather River at Cromberg, Cal., for the year ending Sept. 30, 1913.*

[J. R. Nail, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.2 | 2.4 | ..... | 2.6 | 3.3 | ..... | 5.1 | 3.8 | ..... | 2.5 | ..... | 2.3 |
| 2 | ..... | 2.4 | 2.6 | ..... | ..... | ..... | ..... | 3.75 | ..... | 2.5 | ..... | 2.3 |
| 3 | ..... | ..... | 2.6 | 2.6 | ..... | 2.5 | 5.0 | 3.75 | ..... | 2.5 | 2.45 | ..... |
| 4 | 2.3 | ..... | ..... | 2.6 | 3.3 | ..... | 4.7 | ..... | ..... | 2.5 | ..... | 2.3 |
| 5 | 2.3 | ..... | 2.5 | ..... | ..... | 2.5 | 5.2 | 3.8 | 3.7 | ..... | 2.45 | 2.3 |
| 6 | 2.3 | ..... | 2.5 | ..... | 3.2 | 2.7 | ..... | 3.75 | 3.85 | ..... | 2.45 | ..... |
| 7 | ..... | ..... | ..... | ..... | 3.1 | 2.8 | 4.7 | ..... | 3.8 | 2.45 | ..... | ..... |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... | 4.6 | ..... | ..... | ..... | 2.25 | ..... |
| 9 | ..... | ..... | ..... | 2.7 | ..... | 3.4 | 4.45 | 4.8 | 3.5 | 2.45 | ..... | 2.3 |
| 10 | 2.25 | ..... | 2.6 | ..... | 2.6 | 3.6 | 4.45 | ..... | 3.5 | 2.45 | ..... | ..... |
| 11 | ..... | ..... | ..... | 2.7 | ..... | 3.7 | 4.8 | ..... | ..... | 2.45 | 2.25 | ..... |
| 12 | ..... | ..... | ..... | 2.75 | 2.5 | ..... | 4.8 | ..... | ..... | 2.45 | ..... | 2.35 |
| 13 | ..... | ..... | 2.65 | 2.75 | ..... | 3.5 | ..... | ..... | ..... | 2.45 | 2.3 | 2.3 |
| 14 | ..... | ..... | 2.6 | 2.8 | 2.5 | ..... | 4.4 | ..... | ..... | ..... | 2.3 | 2.25 |
| 15 | 2.25 | ..... | 2.6 | ..... | ..... | 3.45 | ..... | ..... | ..... | ..... | ..... | ..... |
| 16 | 2.25 | ..... | 2.6 | 2.8 | 2.5 | 3.6 | 4.1 | ..... | ..... | ..... | 2.3 | 2.25 |
| 17 | 2.25 | ..... | ..... | 4.0 | ..... | 3.65 | ..... | ..... | ..... | ..... | 2.35 | 2.2 |
| 18 | ..... | ..... | ..... | 4.0 | ..... | 3.75 | 4.45 | ..... | ..... | ..... | ..... | ..... |
| 19 | 2.25 | 2.7 | ..... | ..... | 2.5 | ..... | 4.4 | ..... | ..... | ..... | ..... | 2.2 |
| 20 | ..... | 2.7 | ..... | 4.0 | ..... | 3.8 | ..... | 4.2 | ..... | ..... | ..... | 2.2 |
| 21 | 2.25 | 2.7 | ..... | ..... | ..... | 3.7 | ..... | 4.2 | ..... | ..... | 2.4 | ..... |
| 22 | ..... | 2.7 | ..... | ..... | ..... | ..... | 4.4 | 4.2 | 3.05 | ..... | ..... | 2.2 |
| 23 | ..... | 2.7 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.45 | ..... |
| 24 | 2.35 | 2.65 | ..... | ..... | 2.6 | 3.5 | 4.3 | ..... | ..... | 2.55 | ..... | ..... |
| 25 | ..... | 2.65 | ..... | ..... | ..... | 3.4 | ..... | ..... | ..... | 2.55 | 2.45 | ..... |
| 26 | 2.35 | 2.6 | ..... | ..... | ..... | ..... | 4.25 | 4.1 | 2.8 | 2.55 | 2.45 | ..... |
| 27 | ..... | 2.6 | ..... | ..... | ..... | ..... | 4.2 | 4.1 | ..... | ..... | 2.8 | ..... |
| 28 | 2.4 | 2.6 | 2.6 | ..... | ..... | ..... | 4.2 | 4.1 | ..... | 2.5 | ..... | 2.2 |
| 29 | ..... | 2.6 | ..... | ..... | ..... | 3.45 | 4.15 | 4.1 | ..... | 2.5 | 2.5 | 2.2 |
| 30 | 2.4 | 2.6 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.5 | ..... | ..... |
| 31 | 2.4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.3 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Feather River at Cromberg, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | ..... | ..... | ..... | ..... | ..... | ..... | 6,410 | ..... | ..... | 790 | 193 | 80 |
| 2 | ..... | 68 | 485 | ..... | ..... | ..... | ..... | ..... | ..... | 755 | 192 | 78 |
| 3 | ..... | ..... | ..... | ..... | ..... | ..... | 7,000 | ..... | ..... | 721 | 191 | 76 |
| 4 | ..... | ..... | ..... | ..... | 1,230 | ..... | 6,640 | ..... | ..... | 687 | 190 | 75 |
| 5 | ..... | ..... | ..... | ..... | ..... | ..... | 6,520 | ..... | ..... | 653 | 189 | 75 |
| 6 | ..... | ..... | ..... | ..... | ..... | 585 | 7,240 | ..... | ..... | 619 | 188 | 75 |
| 7 | ..... | ..... | ..... | ..... | ..... | ..... | 9,640 | ..... | ..... | 585 | 187 | 75 |
| 8 | ..... | ..... | ..... | ..... | 585 | ..... | ..... | ..... | ..... | 585 | 186 | 75 |
| 9 | ..... | ..... | 585 | ..... | ..... | 695 | ..... | ..... | ..... | 585 | 186 | 75 |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 572 | 173 | 75 |
| 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,370 | 560 | 160 | 75 |
| 12 | ..... | ..... | ..... | ..... | ..... | 640 | 2,850 | ..... | 1,370 | 548 | 160 | 75 |
| 13 | ..... | ..... | ..... | ..... | 230 | ..... | ..... | ..... | ..... | 535 | 158 | 75 |
| 14 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 517 | 157 | 75 |
| 15 | ..... | ..... | ..... | ..... | ..... | 695 | ..... | ..... | ..... | 508 | 155 | 75 |
| 16 | ..... | ..... | ..... | ..... | ..... | 695 | ..... | 1,920 | ..... | 510 | 153 | 75 |
| 17 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 454 | 152 | 75 |
| 18 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 398 | 150 | 75 |
| 19 | ..... | ..... | 147 | ..... | ..... | ..... | ..... | ..... | ..... | 342 | 149 | 75 |
| 20 | ..... | ..... | ..... | ..... | 136 | ..... | ..... | 1,300 | ..... | 286 | 147 | 75 |
| 21 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 230 | 147 | 75 |
| 22 | ..... | 116 | ..... | ..... | ..... | 2,270 | ..... | ..... | ..... | 230 | 136 | 75 |
| 23 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 230 | 120 | 75 |
| 24 | ..... | ..... | ..... | 1,440 | 116 | 3,350 | ..... | ..... | ..... | 230 | 105 | 75 |
| 25 | ..... | ..... | ..... | ..... | ..... | 3,660 | ..... | ..... | ..... | 230 | 90 | 75 |
| 26 | ..... | 325 | ..... | ..... | ..... | 3,880 | ..... | ..... | ..... | 220 | 90 | 78 |
| 27 | ..... | ..... | ..... | ..... | ..... | 4,210 | ..... | ..... | ..... | 210 | 90 | 82 |
| 28 | ..... | ..... | ..... | ..... | 82 | 4,430 | ..... | ..... | 860 | 200 | 88 | 90 |
| 29 | ..... | 147 | ..... | ..... | ..... | 5,310 | ..... | ..... | 860 | 198 | 86 | 90 |
| 30 | ..... | ..... | 126 | 2,090 | ..... | 6,080 | ..... | ..... | ..... | 196 | 84 | 90 |
| 31 | ..... | ..... | ..... | ..... | ..... | 6,080 | ..... | 1,760 | ..... | 194 | 82 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Feather River at Cromberg, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Days. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911-12. | | | | | | | | | | | | |
| 1 | 90 | 90 | 147 | 152 | 215 | 147 | 230 | 460 | 535 | 98 | 52 | 44 |
| 2 | 90 | 90 | 147 | 159 | 215 | 147 | 535 | 535 | 560 | 94 | 52 | 44 |
| 3 | 90 | 90 | 147 | 165 | 147 | 169 | 535 | 485 | 535 | 90 | 52 | 44 |
| 4 | 90 | 90 | 147 | 172 | 174 | 192 | 535 | 460 | 518 | 90 | 52 | 44 |
| 5 | 90 | 90 | 147 | 172 | 202 | 215 | 461 | 750 | 501 | 85 | 52 | 48 |
| 6 | 90 | 90 | 147 | 172 | 230 | 222 | 387 | 750 | 485 | 80 | 52 | 52 |
| 7 | 90 | 90 | 147 | 172 | 249 | 230 | 313 | 585 | 460 | 75 | 52 | 107 |
| 8 | 90 | 90 | 147 | 172 | 268 | 230 | 240 | 723 | 460 | 75 | 52 | 96 |
| 9 | 90 | 310 | 136 | 172 | 287 | 248 | 240 | 861 | 535 | 70 | 52 | 85 |
| 10 | 90 | 240 | 136 | 172 | 306 | 265 | 248 | 1,000 | 535 | 66 | 52 | 75 |
| 11 | 90 | 170 | 136 | 172 | 325 | 248 | 248 | 792 | 535 | 62 | 52 | 75 |
| 12 | 90 | 107 | 136 | 164 | 345 | 239 | 248 | 585 | 535 | 62 | 52 | 75 |
| 13 | 90 | 107 | 136 | 155 | 345 | 230 | 248 | 560 | 535 | 62 | 52 | 75 |
| 14 | 90 | 117 | 136 | 147 | 345 | 215 | 230 | 535 | 462 | 62 | 51 | 72 |
| 15 | 90 | 127 | 136 | 147 | 325 | 215 | 218 | 585 | 389 | 62 | 50 | 70 |
| 16 | 90 | 137 | 136 | 147 | 325 | 215 | 206 | 535 | 316 | 62 | 49 | 68 |
| 17 | 90 | 147 | 136 | 172 | 325 | 230 | 194 | 535 | 244 | 62 | 48 | 65 |
| 18 | 90 | 147 | 136 | 200 | 305 | 285 | 182 | 535 | 172 | 62 | 48 | 62 |
| 19 | 90 | 147 | 136 | 325 | 305 | 265 | 170 | 510 | 172 | 62 | 48 | 59 |
| 20 | 90 | 147 | 132 | 325 | 305 | 265 | 158 | 585 | 186 | 62 | 46 | 56 |
| 21 | 90 | 147 | 129 | 345 | 305 | 215 | 147 | 585 | 160 | 62 | 45 | 53 |
| 22 | 90 | 147 | 126 | 345 | 305 | 172 | 154 | 585 | 152 | 60 | 44 | 50 |
| 23 | 90 | 147 | 126 | 325 | 305 | 186 | 160 | 612 | 144 | 59 | 44 | 48 |
| 24 | 90 | 147 | 126 | 305 | 305 | 172 | 166 | 435 | 137 | 58 | 44 | 48 |
| 25 | 90 | 147 | 126 | 305 | 172 | 179 | 173 | 485 | 130 | 57 | 44 | 48 |
| 26 | 90 | 147 | 126 | 305 | 136 | 186 | 179 | 535 | 123 | 57 | 44 | 48 |
| 27 | 90 | 147 | 126 | 268 | 147 | 193 | 186 | 535 | 116 | 57 | 44 | 48 |
| 28 | 90 | 147 | 126 | 230 | 147 | 200 | 200 | 543 | 116 | 55 | 44 | 48 |
| 29 | 90 | 147 | 133 | 215 | 147 | 230 | 248 | 551 | 107 | 53 | 44 | 46 |
| 30 | 90 | 147 | 139 | 215 | ..... | 230 | 390 | 560 | 102 | 52 | 44 | 45 |
| 31 | 90 | ..... | 146 | 215 | ..... | 230 | ..... | 535 | ..... | 52 | 44 | ..... |
| 1912-13. | | | | | | | | | | | | |
| 1 | 44 | 62 | 90 | 90 | 265 | 75 | 1,230 | 485 | 550 | 75 | 68 | 52 |
| 2 | 46 | 62 | 90 | 90 | 265 | 75 | 1,340 | 460 | 520 | 75 | 68 | 52 |
| 3 | 49 | 66 | 90 | 90 | 265 | 75 | 1,160 | 460 | 490 | 75 | 68 | 52 |
| 4 | 52 | 80 | 82 | 90 | 265 | 75 | 980 | 472 | 460 | 75 | 68 | 52 |
| 5 | 52 | 76 | 75 | 93 | 248 | 75 | 1,300 | 485 | 435 | 72 | 68 | 52 |
| 6 | 52 | 1,040 | 75 | 97 | 230 | 107 | 1,140 | 460 | 510 | 70 | 68 | 52 |
| 7 | 51 | 500 | 79 | 100 | 200 | 126 | 980 | 535 | 485 | 68 | 58 | 52 |
| 8 | 50 | 200 | 82 | 103 | 164 | 300 | 920 | 535 | 390 | 68 | 48 | 52 |
| 9 | 49 | 175 | 86 | 107 | 127 | 305 | 832 | 1,040 | 345 | 68 | 48 | 52 |
| 10 | 48 | 485 | 90 | 107 | 90 | 390 | 832 | 900 | 345 | 68 | 48 | 52 |
| 11 | 48 | 300 | 92 | 107 | 82 | 435 | 1,040 | 750 | 331 | 68 | 48 | 52 |
| 12 | 48 | 200 | 95 | 116 | 75 | 390 | 1,040 | 680 | 317 | 68 | 50 | 57 |
| 13 | 48 | 150 | 98 | 116 | 75 | 345 | 1,200 | 610 | 303 | 68 | 52 | 52 |
| 14 | 48 | 142 | 90 | 126 | 75 | 335 | 805 | 560 | 290 | 62 | 52 | 48 |
| 15 | 48 | 135 | 90 | 126 | 75 | 325 | 722 | 560 | 277 | 62 | 52 | 48 |
| 16 | 48 | 128 | 90 | 126 | 75 | 390 | 640 | 560 | 264 | 62 | 52 | 48 |
| 17 | 48 | 121 | 90 | 585 | 75 | 412 | 640 | 610 | 251 | 62 | 57 | 44 |
| 18 | 48 | 114 | 90 | 585 | 75 | 460 | 832 | 670 | 238 | 62 | 58 | 44 |
| 19 | 48 | 107 | 90 | 585 | 75 | 510 | 805 | 730 | 225 | 62 | 59 | 44 |
| 20 | 48 | 107 | 90 | 585 | 78 | 485 | 805 | 695 | 212 | 62 | 60 | 44 |
| 21 | 48 | 107 | 90 | 350 | 81 | 435 | 805 | 695 | 199 | 62 | 62 | 44 |
| 22 | 51 | 107 | 90 | 300 | 84 | 640 | 805 | 695 | 186 | 62 | 65 | 44 |
| 23 | 54 | 107 | 90 | 265 | 87 | 485 | 778 | 681 | 171 | 62 | 68 | 44 |
| 24 | 57 | 98 | 90 | 265 | 90 | 345 | 750 | 667 | 156 | 82 | 68 | 44 |
| 25 | 57 | 98 | 90 | 200 | 87 | 305 | 805 | 653 | 141 | 82 | 68 | 44 |
| 26 | 57 | 90 | 90 | 200 | 84 | 310 | 722 | 640 | 126 | 82 | 68 | 44 |
| 27 | 60 | 90 | 90 | 200 | 81 | 315 | 695 | 640 | 136 | 78 | 126 | 44 |
| 28 | 62 | 90 | 90 | 200 | 78 | 320 | 695 | 640 | 147 | 75 | 100 | 44 |
| 29 | 62 | 90 | 90 | 200 | ..... | 325 | 668 | 640 | 123 | 75 | 75 | 44 |
| 30 | 62 | 90 | 90 | 200 | ..... | 650 | 500 | 610 | 99 | 75 | 64 | 46 |
| 31 | 62 | ..... | 90 | 200 | ..... | 945 | ..... | 580 | ..... | 68 | 52 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge for days after July 1, 1911, for which gage heights are missing estimated by comparison of the record at this station with the result obtained by subtracting the flow of the South Fork of Feather River at Enterprise from that of the Middle Fork of Feather River near Oroville.

*Monthly discharge of Middle Fork of Feather River at Cromberg, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet (mean). | Run-off (total in acre-feet). | Month. | Discharge in second-feet (mean). | Run-off (total in acre-feet). |
|---|---|---|---|---|---|
| 1911. | | | 1912–13. | | |
| July | 438 | 26,900 | October | 51.8 | 3,190 |
| August | 146 | 8,980 | November | 174 | 10,400 |
| September | 77.1 | 4,590 | December | 88.5 | 5,440 |
| | | | January | 213 | 13,100 |
| The period | | 40,500 | February | 127 | 7,050 |
| | | | March | 347 | 21,300 |
| 1911–12. | | | April | 882 | 52,500 |
| October | 90.0 | 5,530 | May | 626 | 38,500 |
| November | 136 | 8,090 | June | 291 | 17,300 |
| December | 137 | 8,420 | July | 69.5 | 4,270 |
| January | 216 | 13,300 | August | 63.4 | 3,900 |
| February | 259 | 14,900 | September | 48.1 | 2,860 |
| March | 215 | 13,200 | | | |
| April | 261 | 15,500 | The year | 248 | 180,000 |
| May | 591 | 36,300 | | | |
| June | 332 | 19,800 | | | |
| July | 66.6 | 4,100 | | | |
| August | 48.4 | 2,980 | | | |
| September | 59.9 | 3,560 | | | |
| The year | 201 | 146,000 | | | |

### MIDDLE FORK OF FEATHER RIVER NEAR OROVILLE, CAL.

LOCATION.—In the NW. ¼ sec. 32, T. 26 N., R. 5 E., at highway bridge at Bidwell Bar, 2 miles above junction with the North Fork, and 7 miles northeast of Oroville. South Fork enters 1¼ miles above and Canyon Creek three-fourths mile below station.

RECORDS AVAILABLE.—October 7, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in three sections. High-water section fastened to lower end of bridge pier near left bank; lower sections to a sycamore tree on left bank 100 feet above bridge.

CHANNEL.—Bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable one-half mile below bridge.

DIVERSIONS.—Palermo Land & Water Co.'s canal and South Feather Land & Water Co.'s canal divert water from South Fork of Feather River and tributaries.

ACCURACY.—Rating curve well defined; results excellent, except for high water.

*Discharge measurements of Middle Fork of Feather River near Oroville. Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Jan. 13 | 4.02 | 881 | Apr. 17 | 6.09 | 2,870 | May 13 | 6.80 | 3,680 |
| Apr. 6 | 6.97 | 3,840 | 28 | 7.25 | 4,420 | Sept. 28 | 2.21 | 181 |

*Daily gage height, in feet, of Middle Fork of Feather River near Oroville, Cal., for the year ending Sept. 30, 1913.*

[T. W. Curry, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.32 | 2.6 | 3.15 | 3.6 | 3.9 | 3.6 | 6.3 | 6.3 | 6.0 | 3.5 | 2.9 | 2.38 |
| 2 | 2.30 | 2.6 | 3.1 | 3.4 | 3.9 | 3.6 | 6.9 | 6.2 | 5.8 | 3.5 | 2.9 | 2.38 |
| 3 | 2.30 | 2.65 | 3.1 | 3.3 | 3.9 | 3.6 | 6.4 | 6.1 | 5.8 | 3.4 | 2.9 | 2.38 |
| 4 | 2.28 | 2.85 | 3.2 | 3.3 | 3.8 | 3.6 | 6.6 | 6.4 | 5.6 | 3.5 | 2.75 | 2.38 |
| 5 | 2.28 | 2.8 | 3.1 | 3.2 | 3.8 | 3.7 | 7.4 | 6.7 | 5.4 | 3.4 | 2.7 | 2.35 |
| 6 | 2.32 | 6.8 | 3.0 | 2.7 | 3.8 | 3.8 | 7.0 | 7.1 | 5.3 | 3.3 | 2.7 | 2.32 |
| 7 | 2.35 | 6.0 | 2.9 | 2.9 | 3.8 | 4.0 | 6.6 | 7.5 | 5.4 | 3.2 | 2.65 | 2.30 |
| 8 | 2.35 | 5.0 | 2.9 | 3.45 | 3.8 | 4.2 | 6.4 | 7.6 | 5.1 | 3.2 | 2.6 | 2.30 |
| 9 | 2.35 | 3.9 | 2.9 | 3.3 | 3.8 | 4.2 | 6.4 | 8.6 | 5.0 | 3.1 | 2.6 | 2.30 |
| 10 | 2.32 | 5.5 | 2.9 | 3.2 | 3.8 | 4.5 | 6.4 | 8.2 | 4.8 | 3.1 | 2.6 | 2.28 |
| 11 | 2.32 | 4.6 | 2.9 | 3.0 | 3.8 | 4.8 | 6.8 | 7.4 | 4.6 | 3.1 | 2.6 | 2.28 |
| 12 | 2.32 | 4.0 | 2.9 | 3.25 | 3.9 | 4.8 | 7.0 | 7.2 | 4.5 | 3.0 | 2.55 | 2.28 |
| 13 | 2.32 | 3.9 | 2.9 | 4.0 | 3.9 | 4.6 | 7.4 | 6.8 | 4.4 | 3.0 | 2.5 | 2.25 |
| 14 | 2.30 | 3.8 | 3.0 | 5.0 | 3.9 | 4.5 | 7.0 | 6.7 | 4.4 | 2.95 | 2.5 | 2.25 |
| 15 | 2.30 | 3.7 | 4.2 | 5.0 | 3.9 | 4.4 | 6.6 | 6.7 | 4.2 | 2.9 | 2.5 | 2.22 |
| 16 | 2.30 | 3.7 | 3.8 | 4.6 | 4.0 | 4.4 | 6.2 | 6.9 | 4.2 | 2.9 | 2.5 | 2.22 |
| 17 | 2.32 | 3.6 | 3.6 | 4.2 | 4.2 | 4.5 | 6.2 | 7.1 | 4.0 | 2.9 | 2.5 | 2.20 |
| 18 | 2.32 | 3.5 | 3.8 | 7.0 | 4.2 | 4.9 | 6.4 | 7.8 | 4.0 | 2.9 | 2.5 | 2.20 |
| 19 | 2.32 | 3.4 | 3.6 | 5.8 | 4.1 | 5.0 | 6.4 | 8.0 | 4.0 | 2.9 | 2.5 | 2.20 |
| 20 | 2.30 | 3.3 | 3.5 | 4.8 | 4.0 | 4.8 | 6.4 | 7.5 | 4.0 | 2.9 | 2.45 | 2.20 |
| 21 | 2.30 | 3.5 | 3.4 | 4.3 | 4.0 | 4.8 | 6.7 | 7.2 | 3.8 | 2.9 | 2.45 | 2.20 |
| 22 | 2.35 | 3.35 | 3.2 | 4.2 | 3.9 | 5.4 | 7.0 | 7.3 | 3.8 | 2.9 | 2.42 | 2.20 |
| 23 | 2.35 | 3.35 | 3.25 | 4.0 | 3.8 | 4.9 | 7.0 | 7.2 | 3.8 | 2.9 | 2.42 | 2.20 |
| 24 | 2.8 | 3.35 | 3.2 | 3.8 | 3.9 | 4.8 | 7.0 | 7.2 | 3.8 | 3.05 | 2.40 | 2.18 |
| 25 | 2.8 | 3.3 | 3.2 | 3.8 | 3.8 | 4.0 | 7.3 | 7.0 | 3.8 | 3.0 | 2.40 | 2.18 |
| 26 | 2.9 | 3.3 | 3.1 | 3.8 | 3.7 | 4.4 | 7.7 | 6.8 | 3.7 | 2.95 | 2.6 | 2.20 |
| 27 | 2.8 | 3.25 | 3.05 | 3.8 | 3.7 | 4.4 | 8.0 | 6.7 | 4.0 | 3.0 | 2.42 | 2.20 |
| 28 | 2.8 | 3.2 | 3.0 | 3.8 | 3.6 | 4.4 | 7.5 | 6.6 | 3.9 | 3.0 | 2.45 | 2.20 |
| 29 | 3.0 | 3.2 | 2.85 | 3.8 | ..... | 4.6 | 7.0 | 6.3 | 3.8 | 3.0 | 2.55 | 2.22 |
| 30 | 2.7 | 3.2 | 3.3 | 3.8 | ..... | 4.8 | 6.7 | 6.2 | 3.6 | 2.9 | 2.45 | 2.28 |
| 31 | 2.65 | ..... | 3.4 | 3.8 | ..... | 5.7 | ..... | 6.1 | ..... | 2.95 | 2.40 | ..... |

NOTE.—Gage heights Oct. 25, 1912, and Apr. 23, 1913, were marked "Estimate" by observer.

*Daily discharge, in second-feet, of Middle Fork of Feather River near Oroville, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | ..... | 330 | 365 | 440 | 825 | 620 | 1,280 | 3,370 | 2,720 | 548 | 245 | 184 |
| 2 | ..... | 315 | 365 | 365 | 770 | 720 | 1,350 | 2,850 | 2,480 | 525 | 245 | 184 |
| 3 | ..... | 315 | 365 | 365 | 745 | 620 | 1,500 | 2,480 | 2,480 | 525 | 258 | 204 |
| 4 | ..... | 330 | 365 | 315 | 720 | 595 | 1,500 | 2,370 | 2,370 | 480 | 258 | 258 |
| 5 | ..... | 330 | 365 | 330 | 695 | 1,140 | 1,420 | 2,600 | 2,260 | 480 | 258 | 258 |
| 6 | ..... | 330 | 365 | 365 | 670 | 3,920 | 1,500 | 2,720 | 2,050 | 460 | 245 | 330 |
| 7 | 330 | 330 | 382 | 400 | 670 | 2,260 | 1,580 | 2,980 | 1,950 | 440 | 245 | 880 |
| 8 | 330 | 330 | 382 | 480 | 770 | 1,580 | 1,760 | 3,500 | 1,760 | 440 | 245 | 548 |
| 9 | 365 | 348 | 382 | 548 | 880 | 1,350 | 1,760 | 3,500 | 1,500 | 400 | 240 | 348 |
| 10 | 365 | 1,280 | 365 | 670 | 880 | 1,210 | 1,860 | 3,640 | 1,420 | 400 | 232 | 300 |
| 11 | 365 | 770 | 382 | 940 | 880 | 1,140 | 1,670 | 3,640 | 1,280 | 382 | 225 | 270 |
| 12 | 348 | 502 | 382 | 695 | 825 | 1,140 | 1,420 | 3,640 | 1,280 | 365 | 225 | 245 |
| 13 | 348 | 460 | 348 | 620 | 852 | 1,350 | 1,350 | 3,640 | 1,580 | 365 | 220 | 245 |
| 14 | 330 | 400 | 348 | 595 | 940 | 1,210 | 1,280 | 3,370 | 1,280 | 365 | 216 | 245 |
| 15 | 330 | 420 | 348 | 525 | 880 | 1,070 | 1,280 | 3,370 | 1,140 | 348 | 210 | 240 |
| 16 | 315 | 480 | 365 | 620 | 852 | 1,210 | 1,280 | 3,370 | 1,000 | 330 | 210 | 232 |
| 17 | 315 | 502 | 400 | 745 | 825 | 1,070 | 1,420 | 3,110 | 940 | 330 | 210 | 225 |
| 18 | 315 | 440 | 365 | 620 | 1,280 | 1,210 | 1,420 | 2,850 | 880 | 330 | 204 | 220 |
| 19 | 300 | 460 | 348 | 1,000 | 1,280 | 1,140 | 1,280 | 2,850 | 880 | 330 | 204 | 220 |
| 20 | 300 | 440 | 348 | 880 | 1,000 | 1,140 | 1,280 | 2,850 | 770 | 330 | 204 | 220 |
| 21 | 300 | 440 | 330 | 770 | 940 | 1,070 | 1,210 | 2,850 | 770 | 330 | 200 | 216 |
| 22 | 315 | 400 | 300 | 720 | 880 | 1,000 | 1,140 | 2,370 | 770 | 315 | 200 | 210 |
| 23 | 315 | 400 | 330 | 720 | 798 | 1,000 | 1,140 | 2,260 | 825 | 300 | 196 | 210 |
| 24 | 300 | 400 | 365 | 720 | 770 | 1,000 | 1,210 | 2,150 | 825 | 300 | 190 | 210 |
| 25 | 300 | 400 | 300 | 720 | 720 | 1,000 | 1,280 | 2,370 | 770 | 300 | 184 | 204 |
| 26 | 330 | 400 | 285 | 2,850 | 670 | 1,070 | 1,420 | 3,370 | 670 | 300 | 184 | 204 |
| 27 | 365 | 400 | 300 | 1,760 | 670 | 1,140 | 1,420 | 3,640 | 670 | 285 | 184 | 204 |
| 28 | 330 | 382 | 440 | 1,280 | 670 | 1,280 | 1,420 | 3,240 | 620 | 270 | 184 | 204 |
| 29 | 330 | 382 | 382 | 1,000 | 645 | 1,500 | 2,050 | 3,240 | 570 | 270 | 184 | 204 |
| 30 | 330 | 382 | 365 | 940 | ..... | 1,420 | 2,720 | 3,110 | 570 | 270 | 184 | 204 |
| 31 | 330 | ..... | 365 | 852 | ..... | 1,280 | ..... | 2,850 | ..... | 258 | 184 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Feather River near Oroville, Cal., for the years ending Sept. 30, 1912–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 204 | 270 | 460 | 670 | 825 | 670 | 2,980 | 2,980 | 2,600 | 620 | 365 | 216 |
| 2 | 200 | 270 | 440 | 570 | 825 | 670 | 3,780 | 2,850 | 2,370 | 620 | 365 | 216 |
| 3 | 200 | 285 | 440 | 525 | 825 | 670 | 3,110 | 2,720 | 2,370 | 570 | 365 | 216 |
| 4 | 196 | 348 | 480 | 525 | 770 | 670 | 3,370 | 3,110 | 2,150 | 620 | 315 | 216 |
| 5 | 196 | 330 | 440 | 480 | 770 | 720 | 4,540 | 3,500 | 1,950 | 570 | 300 | 210 |
| 6 | 204 | 3,640 | 400 | 300 | 770 | 770 | 3,920 | 4,070 | 1,860 | 525 | 300 | 204 |
| 7 | 210 | 2,600 | 365 | 365 | 770 | 880 | 3,370 | 4,710 | 1,850 | 480 | 285 | 200 |
| 8 | 210 | 1,580 | 365 | 595 | 770 | 1,000 | 3,110 | 4,880 | 1,670 | 480 | 270 | 200 |
| 9 | 210 | 825 | 365 | 525 | 770 | 1,000 | 3,110 | 6,820 | 1,580 | 440 | 270 | 200 |
| 10 | 204 | 2,050 | 365 | 480 | 770 | 1,210 | 3,110 | 6,020 | 1,420 | 440 | 270 | 196 |
| 11 | 204 | 1,280 | 365 | 400 | 770 | 1,420 | 3,640 | 4,540 | 1,280 | 440 | 270 | 196 |
| 12 | 204 | 880 | 365 | 502 | 825 | 1,420 | 3,920 | 4,220 | 1,210 | 400 | 258 | 196 |
| 13 | 204 | 825 | 365 | 880 | 825 | 1,280 | 4,540 | 3,640 | 1,140 | 400 | 245 | 190 |
| 14 | 200 | 770 | 400 | 1,580 | 825 | 1,210 | 3,920 | 3,500 | 1,140 | 382 | 245 | 190 |
| 15 | 200 | 720 | 1,000 | 1,580 | 825 | 1,140 | 3,370 | 3,500 | 1,000 | 365 | 245 | 184 |
| 16 | 200 | 720 | 770 | 1,280 | 880 | 1,140 | 2,850 | 3,780 | 1,000 | 365 | 245 | 184 |
| 17 | 204 | 670 | 670 | 1,000 | 1,000 | 1,210 | 2,850 | 4,070 | 880 | 365 | 245 | 184 |
| 18 | 204 | 620 | 770 | 3,920 | 1,000 | 1,500 | 3,110 | 5,240 | 880 | 365 | 245 | 184 |
| 19 | 204 | 570 | 670 | 2,370 | 940 | 1,580 | 3,110 | 5,620 | 880 | 365 | 245 | 184 |
| 20 | 200 | 525 | 620 | 1,420 | 880 | 1,420 | 3,110 | 4,710 | 880 | 365 | 232 | 184 |
| 21 | 200 | 620 | 570 | 1,070 | 880 | 1,420 | 3,500 | 4,220 | 770 | 365 | 232 | 184 |
| 22 | 210 | 548 | 480 | 1,000 | 825 | 1,950 | 3,920 | 4,380 | 770 | 365 | 225 | 184 |
| 23 | 210 | 548 | 502 | 880 | 770 | 1,500 | 3,920 | 4,220 | 770 | 365 | 225 | 184 |
| 24 | 330 | 548 | 480 | 770 | 825 | 1,420 | 3,920 | 4,220 | 770 | 420 | 220 | 177 |
| 25 | 330 | 525 | 480 | 770 | 770 | 880 | 4,380 | 3,920 | 770 | 400 | 220 | 177 |
| 26 | 365 | 525 | 440 | 770 | 720 | 1,140 | 5,060 | 3,640 | 720 | 382 | 270 | 180 |
| 27 | 330 | 502 | 420 | 770 | 720 | 1,140 | 5,620 | 3,500 | 880 | 400 | 225 | 180 |
| 28 | 330 | 480 | 400 | 770 | 670 | 1,140 | 4,710 | 3,370 | 825 | 400 | 232 | 180 |
| 29 | 400 | 480 | 348 | 770 | ..... | 1,280 | 3,920 | 2,980 | 770 | 400 | 258 | 184 |
| 30 | 300 | 480 | 525 | 770 | ..... | 1,420 | 3,500 | 2,850 | 670 | 365 | 232 | 196 |
| 31 | 285 | ..... | 570 | 770 | ..... | 2,260 | ..... | 2,720 | ..... | 382 | 220 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Estimates for the year ending Sept. 30, 1912, supersedes those published in Water-Supply Paper 331, p. 290, and Water-Supply Paper 298, p. 243.

*Monthly discharge of Middle Fork of Feather River near Oroville, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911–12. | | | | | |
| October 7–31 | 365 | 300 | 328 | 16,300 | A. |
| November | 1,280 | 315 | 437 | 26,000 | A. |
| December | 440 | 285 | 358 | 22,000 | A. |
| January | 2,850 | 315 | 769 | 47,300 | A. |
| February | 1,280 | 645 | 857 | 47,600 | A. |
| March | 3,920 | 595 | 1,240 | 76,200 | A. |
| April | 2,720 | 1,140 | 1,470 | 87,500 | A. |
| May | 3,640 | 2,150 | 3,040 | 187,000 | A. |
| June | 2,720 | 570 | 1,300 | 77,400 | A. |
| July | 548 | 258 | 367 | 22,600 | A. |
| August | 258 | 184 | 215 | 13,200 | A. |
| September | 880 | 184 | 264 | 15,700 | A. |
| The period | ..... | ..... | ..... | 639,000 | |
| 1912–13. | | | | | |
| October | 400 | 196 | 237 | 14,600 | A. |
| November | 3,640 | 270 | 834 | 49,600 | A. |
| December | 1,000 | 348 | 495 | 30,400 | A. |
| January | 3,920 | 300 | 938 | 57,700 | A. |
| February | 1,000 | 670 | 815 | 45,300 | A. |
| March | 2,260 | 670 | 1,200 | 73,800 | A. |
| April | 5,620 | 2,850 | 3,710 | 221,000 | A. |
| May | 6,820 | 2,720 | 4,020 | 247,000 | A. |
| June | 2,600 | 670 | 1,260 | 75,000 | A. |
| July | 620 | 365 | 433 | 26,600 | A. |
| August | 365 | 220 | 263 | 16,200 | A. |
| September | 216 | 177 | 193 | 11,500 | A. |
| The year | 6,820 | 177 | 1,200 | 869,000 | |

NOTE.—See footnote to table of daily discharge.

### SOUTH FORK OF FEATHER RIVER AT ENTERPRISE, CAL.

LOCATION.—In the NE. ¼ sec. 1, T. 19 N., R. 6 E., one-half mile above highway bridge at Enterprise; about 700 feet above mouth of Powell Creek.

RECORDS AVAILABLE.—October 8, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on left bank.

CHANNEL.—Gravel and small bowlders.

DISCHARGE MEASUREMENTS.—Made from highway bridge, from cable 60 feet above gage, or by wading.

DIVERSIONS.—Diversion dam of Palermo Land & Water Co.'s canal is 1 mile above the station. South Feather Land & Water Co.'s canal diverts water from Lost and Pinkard creeks above station for irrigation in the vicinity of Wyandotte and Bangor.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of South Fork of Feather River at Enterprise, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Jan. 14 | 2.57 | 285 | Apr. 18 | 3.47 | [b] 614 | May 12 | 3.82 | 835 |
| Apr. 5 | 3.98 | [a] 906 | 28 | 4.04 | 922 | Sept. 29 | .58 | .9 |

[a] Measured from bridge; discharge of Powell Creek (33 second-feet) has been deducted.
[b] Measured from bridge; estimated discharge of Powell Creek (2 second-feet) has been deducted.

*Daily gage height, in feet, of South Fork of Feather River at Enterprise, Cal., for the year ending Sept. 30, 1913.*

[Gus Alm, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76 | 1.12 | 1.40 | 1.78 | 2.1 | 1.90 | 3.1 | 3.4 | 3.0 | 1.40 | 0.62 | 0.60 |
| 2 | .62 | 1.00 | 1.40 | 1.60 | 2.1 | 1.85 | 3.2 | 3.3 | 2.9 | 1.36 | .61 | .60 |
| 3 | .62 | 1.17 | 1.40 | 1.60 | 2.15 | 1.84 | 2.95 | 3.3 | 2.8 | 1.32 | .61 | .60 |
| 4 | .62 | 1.37 | 1.39 | 1.52 | 2.1 | 1.86 | 3.5 | 3.4 | 2.75 | 1.39 | .60 | .60 |
| 5 | .60 | 1.25 | 1.36 | 1.29 | 1.98 | 1.90 | 3.9 | 3.6 | 2.65 | 1.31 | .60 | .60 |
| 6 | .70 | 4.5 | 1.30 | 1.33 | 1.96 | 2.0 | 3.6 | 3.8 | 2.55 | 1.26 | .60 | .60 |
| 7 | .63 | 2.9 | 1.31 | 1.40 | 1.96 | 2.1 | 3.4 | 4.0 | 2.6 | 1.20 | .60 | .60 |
| 8 | .63 | 2.1 | 1.32 | 1.72 | 1.98 | 2.2 | 3.3 | 4.0 | 2.4 | 1.18 | .60 | .60 |
| 9 | .63 | 1.87 | 1.32 | 1.58 | 1.98 | 2.25 | 3.3 | 5.0 | 2.3 | 1.12 | .60 | .60 |
| 10 | .63 | 2.9 | 1.30 | 1.47 | 1.97 | 2.4 | 3.4 | 4.4 | 2.2 | 1.08 | .60 | .60 |
| 11 | .63 | 2.35 | 1.28 | 1.44 | 2.0 | 2.5 | 3.6 | 4.0 | 2.1 | 1.03 | .60 | .60 |
| 12 | .63 | 2.1 | 1.29 | 1.58 | 2.0 | 2.35 | 3.8 | 3.9 | 2.05 | .99 | .60 | .60 |
| 13 | .63 | 1.91 | 1.29 | 2.1 | 2.0 | 2.35 | 4.0 | 3.7 | 1.98 | .90 | .60 | .60 |
| 14 | .63 | 1.82 | 1.34 | 2.65 | 2.0 | 2.3 | 3.8 | 3.6 | 1.90 | .90 | .60 | .60 |
| 15 | .62 | 1.90 | 2.0 | 3.2 | 2.05 | 2.2 | 3.6 | 3.6 | 1.84 | .80 | .60 | .60 |
| 16 | .63 | 1.80 | 2.0 | 2.7 | 2.05 | 2.2 | 3.4 | 3.6 | 1.80 | .80 | .60 | .59 |
| 17 | .63 | 1.70 | 1.89 | 2.3 | 2.2 | 2.35 | 3.4 | 3.7 | 1.75 | .78 | .60 | .59 |
| 18 | .63 | 1.63 | 1.69 | 4.6 | 2.2 | 2.4 | 3.5 | 4.2 | 1.70 | .71 | .60 | .59 |
| 19 | .62 | 1.60 | 1.70 | 3.4 | 2.1 | 2.45 | 3.4 | 4.0 | 1.70 | .80 | .60 | .59 |
| 20 | .61 | 1.89 | 1.62 | 2.35 | 2.1 | 2.4 | 3.5 | 3.9 | 1.65 | .84 | .60 | .59 |
| 21 | .63 | 1.69 | 1.55 | 2.45 | 2.1 | 2.35 | 3.6 | 3.8 | 1.62 | .74 | .60 | .59 |
| 22 | .68 | 1.62 | 1.49 | 2.3 | 2.0 | 2.75 | 3.7 | 3.8 | 1.56 | .68 | .60 | .59 |
| 23 | 1.67 | 1.57 | 1.50 | 2.1 | 2.0 | 2.55 | 3.8 | 3.7 | 1.56 | .74 | .60 | .59 |
| 24 | 2.0 | 1.55 | 1.45 | 2.1 | 2.0 | 2.4 | 3.8 | 3.7 | 1.56 | 1.00 | .60 | .59 |
| 25 | 1.18 | 1.52 | 1.45 | 2.05 | 1.90 | 2.3 | 3.9 | 3.5 | 1.53 | .92 | .60 | .59 |
| 26 | 1.38 | 1.40 | 1.40 | 2.05 | 1.91 | 2.25 | 4.2 | 3.5 | 1.58 | .88 | .60 | .59 |
| 27 | 1.21 | 1.48 | 1.40 | 2.05 | 1.90 | 2.35 | 4.2 | 3.4 | 1.66 | .85 | .60 | .59 |
| 28 | 1.21 | 1.46 | 1.40 | 2.05 | 1.85 | 2.3 | 4.0 | 3.5 | 1.68 | .90 | .60 | .59 |
| 29 | 1.21 | 1.46 | 1.38 | 2.05 | ..... | 2.3 | 3.9 | 3.2 | 1.53 | .84 | .60 | .58 |
| 30 | 1.21 | 1.44 | 1.58 | 2.05 | ..... | 2.5 | 3.6 | 3.1 | 1.45 | .70 | .60 | .58 |
| 31 | 1.17 | ..... | 1.60 | 2.05 | ..... | 2.8 | ..... | 3.2 | ..... | .62 | .60 | ..... |

*Daily discharge, in second-feet, of South Fork of Feather River at Enterprise, Cal., for the year ending Sept. 30, 1913.*

| Date. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.5 | 20 | 48 | 106 | 170 | 128 | 457 | 588 | 419 | 48 | 1.5 | 1.5 |
| 2 | 1.5 | 12 | 48 | 76 | 170 | 119 | 498 | 542 | 385 | 43 | 1.5 | 1.5 |
| 3 | 1.5 | 24 | 48 | 76 | 182 | 117 | 402 | 542 | 355 | 38 | 1.5 | 1.5 |
| 4 | 1.5 | 44 | 47 | 65 | 170 | 121 | 636 | 588 | 340 | 47 | 1.5 | 1.5 |
| 5 | 1.5 | 31 | 43 | 35 | 144 | 128 | 850 | 686 | 312 | 37 | 1.5 | 1.5 |
| 6 | 3 | 1,210 | 36 | 40 | 140 | 148 | 686 | 792 | 284 | 32 | 1.5 | 1.5 |
| 7 | 2 | 385 | 37 | 48 | 140 | 170 | 588 | 910 | 298 | 26 | 1.5 | 1.5 |
| 8 | 2 | 170 | 38 | 96 | 144 | 194 | 542 | 910 | 244 | 24 | 1.5 | 1.5 |
| 9 | 2 | 123 | 38 | 73 | 144 | 206 | 542 | 1,560 | 219 | 20 | 1.5 | 1.5 |
| 10 | 2 | 385 | 36 | 58 | 142 | 244 | 588 | 1,150 | 194 | 17 | 1.5 | 1.5 |
| 11 | 2 | 232 | 34 | 54 | 148 | 270 | 686 | 910 | 170 | 14 | 1.5 | 1.5 |
| 12 | 2 | 170 | 35 | 73 | 148 | 232 | 792 | 850 | 159 | 12 | 1.5 | 1.5 |
| 13 | 2 | 130 | 35 | 170 | 148 | 232 | 910 | 738 | 144 | 7 | 1.5 | 1.5 |
| 14 | 2 | 114 | 41 | 312 | 148 | 219 | 792 | 686 | 128 | 7 | 1.5 | 1.5 |
| 15 | 1.5 | 128 | 148 | 498 | 159 | 194 | 686 | 686 | 117 | 4 | 1.5 | 1.5 |
| 16 | 2 | 110 | 148 | 326 | 159 | 194 | 588 | 686 | 110 | 4 | 1.5 | 1 |
| 17 | 2 | 92 | 126 | 219 | 194 | 232 | 588 | 738 | 101 | 4 | 1.5 | 1 |
| 18 | 2 | 81 | 90 | 1,280 | 194 | 244 | 636 | 1,030 | 92 | 3 | 1.5 | 1 |
| 19 | 1.5 | 76 | 92 | 588 | 170 | 257 | 588 | 910 | 92 | 4 | 1.5 | 1 |
| 20 | 1.5 | 126 | 79 | 232 | 170 | 244 | 636 | 850 | 84 | 5.5 | 1.5 | 1 |
| 21 | 2 | 90 | 69 | 257 | 170 | 232 | 686 | 792 | 79 | 3.5 | 1.5 | 1 |
| 22 | 2.5 | 79 | 61 | 219 | 148 | 340 | 738 | 792 | 70 | 2.5 | 1.5 | 1 |
| 23 | 87 | 72 | 62 | 170 | 148 | 284 | 792 | 738 | 70 | 3.5 | 1.5 | 1 |
| 24 | 148 | 69 | 55 | 170 | 148 | 244 | 792 | 738 | 70 | 12 | 1.5 | 1 |
| 25 | 24 | 65 | 55 | 159 | 128 | 219 | 850 | 636 | 66 | 8 | 1.5 | 1 |
| 26 | 46 | 48 | 48 | 159 | 130 | 206 | 1,030 | 636 | 73 | 6.5 | 1.5 | 1 |
| 27 | 27 | 59 | 48 | 159 | 128 | 232 | 1,030 | 588 | 86 | 5.5 | 1.5 | 1 |
| 28 | 27 | 56 | 48 | 159 | 119 | 219 | 910 | 636 | 89 | 7 | 1.5 | 1 |
| 29 | 27 | 56 | 46 | 159 | ..... | 219 | 850 | 498 | 66 | 5.5 | 1.5 | .9 |
| 30 | 27 | 44 | 73 | 159 | ..... | 270 | 686 | 457 | 55 | 3 | 1.5 | .9 |
| 31 | 24 | ..... | 76 | 159 | ..... | 355 | ..... | 498 | ..... | 1.5 | 1.5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of South Fork of Feather River at Enterprise, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 148 | 1.5 | 15.5 | 953 | B. |
| November | 1,210 | 12 | 143 | 8,510 | A. |
| December | 148 | 34 | 60.9 | 3,740 | A. |
| January | 1,280 | 35 | 205 | 12,600 | A. |
| February | 194 | 119 | 154 | 8,550 | A. |
| March | 355 | 117 | 217 | 13,300 | A. |
| April | 1,030 | 402 | 702 | 41,800 | A. |
| May | 1,560 | 457 | 754 | 46,400 | A. |
| June | 419 | 55 | 166 | 9,880 | A. |
| July | 48 | 1.5 | 14.7 | 904 | B. |
| August | 1.5 | 1.5 | 1.50 | 92 | C. |
| September | 1.5 | .9 | 1.24 | 74 | C. |
| The year | 1,560 | .9 | 203 | 147,000 | |

### PALERMO LAND & WATER CO.'S CANAL AT ENTERPRISE, CAL.

LOCATION.—In the NE. ¼ sec. 1, T. 19 N., R. 6 E., about half a mile above highway bridge at Enterprise, about 1 mile below intake at diversion dam on South Fork of Feather River.

RECORDS AVAILABLE.—October 8, 1911, to September 30, 1913.

GAGE.—Vertical staff fastened to post on right bank.

CHANNEL.—Gravel and sand.

DISCHARGE MEASUREMENTS.—Made by wading.

ACCURACY.—Rating curve fairly well defined; results good.

This canal furnishes water for irrigation below Oroville.

*Discharge measurements of Palermo Land & Water Co.'s canal at Enterprise, Cal., during the year ending Sept. 30, 1913.*

[Made by Lasley Lee.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Jan. 24 | 0.55 | 14 | Apr. 27 | 1.07 | 27 | Sept. 29 | 0.84 | 24 |
| Apr. 5 | .72 | 18 | May 12 | 1.20 | 31 | | | |

*Daily gage height, in feet, of Palermo Land & Water Co.'s canal at Enterprise, Cal., for the year ending Sept. 30, 1913.*

[Gus. Alm, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.80 | 0.72 | 0.52 | 0.68 | 0.47 | 0.84 | 0.91 | 1.01 | 1.26 | 1.44 | 1.35 | 0.86 |
| 2 | .83 | .70 | .52 | .68 | .47 | .84 | .91 | 1.00 | 1.24 | 1.43 | 1.38 | .88 |
| 3 | .85 | .70 | .52 | .64 | ..... | .84 | .90 | 1.17 | 1.24 | 1.43 | 1.31 | .90 |
| 4 | .87 | .71 | .53 | .62 | .87 | .83 | .72 | 1.18 | 1.24 | 1.46 | 1.25 | .89 |
| 5 | .83 | .70 | .53 | .70 | .87 | .84 | .70 | 1.30 | 1.29 | 1.46 | 1.22 | .88 |
| 6 | .92 | .64 | .52 | .55 | .87 | .83 | .81 | 1.40 | 1.28 | 1.44 | 1.20 | .89 |
| 7 | .89 | .50 | .52 | .70 | .87 | .82 | .81 | 1.38 | 1.29 | 1.45 | 1.20 | .85 |
| 8 | .89 | .47 | .52 | .29 | .89 | .82 | .80 | 1.39 | 1.25 | 1.47 | 1.15 | .82 |
| 9 | .89 | .55 | .52 | .65 | .89 | .84 | .80 | 1.38 | 1.25 | 1.46 | 1.13 | .82 |
| 10 | .87 | .60 | .53 | .59 | .89 | .84 | .80 | 1.22 | 1.25 | 1.45 | 1.12 | .80 |
| 11 | .87 | .56 | .53 | .40 | .87 | .85 | .80 | 1.20 | 1.22 | 1.45 | 1.12 | .80 |
| 12 | .87 | .57 | .64 | 1.00 | .89 | .86 | .82 | 1.20 | 1.22 | 1.44 | 1.10 | .80 |
| 13 | .85 | .54 | .53 | .72 | .88 | .86 | .83 | 1.19 | 1.35 | 1.50 | 1.06 | .80 |
| 14 | .83 | .53 | .65 | .72 | .89 | .86 | .82 | 1.18 | 1.37 | 1.50 | 1.08 | .80 |
| 15 | .82 | .55 | .69 | .53 | .90 | .86 | .81 | 1.18 | 1.37 | 1.49 | 1.06 | .79 |
| 16 | .83 | .55 | .67 | .28 | .90 | .85 | .80 | 1.34 | 1.42 | 1.49 | 1.06 | .78 |
| 17 | .83 | .57 | .67 | .10 | .89 | ..... | .80 | 1.35 | 1.42 | 1.49 | 1.04 | .76 |
| 18 | .83 | .54 | .67 | .05 | .90 | .88 | .80 | 1.32 | 1.41 | 1.47 | 1.04 | .77 |
| 19 | .81 | .53 | .68 | .50 | .90 | .88 | .80 | 1.30 | 1.41 | 1.49 | 1.02 | .77 |
| 20 | .88 | .55 | .68 | .50 | .90 | .88 | .80 | 1.28 | 1.41 | 1.50 | 1.00 | .76 |
| 21 | .88 | .55 | .65 | .43 | .90 | .88 | .80 | 1.25 | 1.41 | 1.48 | .98 | .79 |
| 22 | .91 | .54 | .68 | .45 | .90 | .71 | .81 | 1.27 | 1.41 | 1.45 | .98 | .79 |
| 23 | .91 | .53 | .68 | .57 | .90 | .70 | .81 | 1.27 | 1.42 | 1.49 | .96 | .77 |
| 24 | .91 | .55 | .68 | .57 | .85 | .52 | 1.04 | 1.29 | 1.43 | 1.42 | .93 | .77 |
| 25 | .71 | .53 | .67 | .57 | .84 | .71 | 1.04 | 1.26 | 1.44 | 1.41 | .92 | .76 |
| 26 | .71 | .55 | .65 | .47 | .84 | .71 | 1.06 | 1.31 | 1.44 | 1.40 | .91 | .76 |
| 27 | .72 | .55 | .65 | .47 | .84 | .70 | 1.06 | 1.31 | 1.41 | 1.50 | .90 | .75 |
| 28 | .72 | .55 | .68 | .47 | .83 | .82 | 1.05 | 1.20 | 1.41 | 1.50 | .91 | .75 |
| 29 | .72 | .55 | .68 | .47 | ..... | .81 | 1.04 | 1.18 | 1.41 | 1.48 | .90 | .84 |
| 30 | .72 | .55 | .68 | .47 | ..... | .83 | 1.02 | 1.20 | 1.41 | 1.44 | .90 | .80 |
| 31 | .72 | ..... | .68 | .47 | ..... | .90 | ..... | 1.26 | ..... | 1.40 | .90 | ..... |

*Daily discharge, in second-feet, of Palermo Land & Water Co.'s canal at Enterprise, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 18.3 | 13.5 | 17.3 | 12.3 | 21 | 23 | 26 | 33 | 38 | 35 | 22 |
| 2 | 21 | 17.8 | 13.5 | 17.3 | 12.3 | 21 | 23 | 25 | 32 | 38 | 36 | 22 |
| 3 | 22 | 17.8 | 13.5 | 16 4 | 9.6 | 21 | 23 | 30 | 32 | 38 | 34 | 23 |
| 4 | 22 | 18.0 | 13.7 | 15.9 | 22 | 21 | 18.2 | 30 | 32 | 38 | 32 | 22 |
| 5 | 21 | 17.8 | 13.7 | 17.8 | 22 | 21 | 17.8 | 34 | 33 | 38 | 31 | 22 |
| 6 | 23 | 16.4 | 13.5 | 14.2 | 22 | 21 | 20 | 37 | 33 | 38 | 31 | 22 |
| 7 | 23 | 13.0 | 13.5 | 17.8 | 22 | 21 | 20 | 36 | 33 | 38 | 31 | 22 |
| 8 | 23 | 12.3 | 13.5 | 8.4 | 23 | 21 | 20 | 36 | 32 | 39 | 29 | 21 |
| 9 | 23 | 14.2 | 13.5 | 16.6 | 23 | 21 | 20 | 36 | 32 | 38 | 29 | 21 |
| 10 | 22 | 15.4 | 13.7 | 15.2 | 23 | 21 | 20 | 31 | 32 | 38 | 29 | 20 |
| 11 | 22 | 14.4 | 13.7 | 10.8 | 22 | 22 | 20 | 31 | 31 | 38 | 29 | 20 |
| 12 | 22 | 14.7 | 16.4 | 25 | 23 | 22 | 21 | 31 | 31 | 38 | 28 | 20 |
| 13 | 22 | 14.0 | 13.7 | 18.3 | 22 | 22 | 21 | 31 | 35 | 40 | 27 | 20 |
| 14 | 21 | 13.7 | 16.6 | 18.3 | 23 | 22 | 21 | 30 | 36 | 40 | 27 | 20 |
| 15 | 21 | 14.2 | 17.6 | 13.7 | 23 | 22 | 20 | 30 | 36 | 39 | 27 | 20 |
| 16 | 21 | 14.2 | 17.1 | 8.2 | 23 | 22 | 20 | 35 | 37 | 39 | 27 | 19.7 |
| 17 | 21 | 14.7 | 17.1 | 4.8 | 23 | 14.5 | 20 | 35 | 37 | 39 | 26 | 19.2 |
| 18 | 21 | 14.0 | 17.1 | 4.0 | 23 | 22 | 20 | 34 | 37 | 39 | 26 | 19.5 |
| 19 | 20 | 13.7 | 17.3 | 13.0 | 23 | 22 | 20 | 34 | 37 | 39 | 26 | 19.5 |
| 20 | 22 | 14.2 | 17.3 | 13.0 | 23 | 22 | 20 | 33 | 37 | 40 | 25 | 19.2 |
| 21 | 22 | 14.2 | 16.6 | 11.5 | 23 | 22 | 20 | 32 | 37 | 39 | 25 | 20 |
| 22 | 23 | 14.0 | 17.3 | 11.9 | 23 | 18.0 | 20 | 33 | 37 | 38 | 25 | 20 |
| 23 | 23 | 13.7 | 17.3 | 14.7 | 23 | 17.8 | 20 | 33 | 37 | 39 | 24 | 19.5 |
| 24 | 23 | 14.2 | 17.3 | 14.7 | 22 | 13.5 | 26 | 33 | 38 | 37 | 24 | 19.5 |
| 25 | 18.0 | 13.7 | 17.1 | 14.7 | 21 | 18.0 | 26 | 33 | 38 | 37 | 23 | 19.2 |
| 26 | 18.0 | 14.2 | 16.6 | 12.3 | 21 | 18.0 | 27 | 34 | 38 | 37 | 23 | 19.2 |
| 27 | 18.3 | 14.2 | 16.6 | 12.3 | 21 | 17.8 | 27 | 34 | 37 | 40 | 23 | 19.0 |
| 28 | 18.3 | 14.2 | 17.3 | 12.3 | 21 | 21 | 27 | 31 | 37 | 40 | 23 | 19.0 |
| 29 | 18.3 | 14.2 | 17.3 | 12.3 | ..... | 20 | 26 | 30 | 37 | 39 | 23 | 21 |
| 30 | 18.3 | 14.2 | 17.3 | 12.3 | ..... | 21 | 26 | 31 | 37 | 38 | 23 | 20 |
| 31 | 18.3 | ..... | 17.3 | 12.3 | ..... | 23 | ..... | 33 | ..... | 37 | 23 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge for Feb. 3 and Mar. 17, 1913, when water was turned off and on in the canal, computed from three gage readings, each representing the flow for a part of the day.

*Monthly discharge of Palermo Land & Water Co.'s canal at Enterprise, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 23 | 18.0 | 21.0 | 1,290 | B. |
| November | 18.3 | 12.3 | 14.8 | 881 | B. |
| December | 17.6 | 13.5 | 15.7 | 965 | B. |
| January | 25 | 4.0 | 13.8 | 848 | B. |
| February | 23 | 9.6 | 21 2 | 1,180 | B. |
| March | 23 | 13.5 | 20.4 | 1,250 | B. |
| April | 27 | 17.8 | 21.8 | 1,300 | B. |
| May | 37 | 25 | 32.3 | 1,990 | A. |
| June | 38 | 31 | 35.0 | 2,080 | A. |
| July | 40 | 37 | 38.5 | 2,370 | A. |
| August | 36 | 23 | 27.2 | 1,670 | B. |
| September | 23 | 19.0 | 20.4 | 1,210 | B. |
| The year | 40 | 4.0 | 23.5 | 17,000 | |

### MIDDLE FORK OF YUBA RIVER[1] NEAR NORTH SAN JUAN, CAL.

LOCATION.—In the N. ½ NW. ¼ sec. 23, T. 18 N., R. 8 E., below highway bridge at Freeman's Crossing, in Tahoe National Forest, 1¼ miles northeast of North San Juan. Oregon Creek enters three-fourths mile above, Moonshine Creek one-fourth mile below, and North Fork of Yuba River about 4 miles below station.

RECORDS AVAILABLE.—October 27, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff wedged between two large bowlders on right bank one-fourth mile below bridge.

CHANNEL.—Gravel and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet above gage or by wading.

ACCURACY.—Rating curve fairly well defined. Results good.

*Discharge measurements of Middle Fork of Yuba River near North San Juan, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 30 | Lasley Lee | 5.18 | 356 | May 7 | Lasley Lee | 6.59 | 1,420 |
| Mar. 19 | do | 5.29 | 407 | 10 | do | 6.60 | 1,380 |
| Apr. 4 | E. C. Murphy | 6.00 | 813 | Aug. 19 | H. J. Tompkins | 4.19 | 51 |
| 5 | do | 6.48 | 1,290 | 20 | do | 4.19 | 56 |
| 5 | do | 6.46 | 1,250 | | | | |

*Daily gage height, in feet, of Middle Fork of Yuba River near North San Juan, Cal., for the year ending Sept. 30, 1913.*

[Henry Zurhorst, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.1 | 4.4 | 4.5 | 4.8 | 5.2 | 4.8 | 6.0 | 5.85 | 5.9 | 4.65 | 4.40 | 4.20 |
| 2 | 4.1 | 4.4 | 4.4 | 4.7 | 5.1 | 4.8 | 5.95 | 5.8 | 5.9 | 4.60 | 4.35 | 4.20 |
| 3 | 4.1 | 4.4 | 4.4 | 4.7 | 5.1 | 4.8 | 5.7 | 5.85 | 5.8 | 4.60 | 4.32 | 4.18 |
| 4 | 4.1 | 4.5 | 4.5 | 4.7 | 5.0 | 4.8 | 6.0 | 6.05 | 5.75 | 4.62 | 4.32 | 4.18 |
| 5 | 4.1 | 4.4 | 4.4 | 4.5 | 5.0 | 4.9 | 6.5 | 6.3 | 5.7 | 4.60 | 4.30 | 4.22 |
| 6 | 4.1 | 6.8 | 4.4 | 4.4 | 5.0 | 5.0 | 6.2 | 6.5 | 5.65 | 4.52 | 4.30 | 4.22 |
| 7 | 4.1 | 5.6 | 4.4 | 4.8 | 5.0 | 5.0 | 6.0 | 6.55 | 5.8 | 4.50 | 4.28 | 4.20 |
| 8 | 4.1 | 4.8 | 4.4 | 4.7 | 5.0 | 5.1 | 5.9 | 6.45 | 5.55 | 4.50 | 4.22 | 4.22 |
| 9 | 4.1 | 4.8 | 4.4 | 4.6 | 5.0 | 5.2 | 5.9 | 7.0 | 5.4 | 4.48 | 4.22 | 4.12 |
| 10 | 4.2 | 5.6 | 4.4 | 4.5 | 5.0 | 5.2 | 6.0 | 6.7 | 5.3 | 4.42 | 4.22 | 4.12 |
| 11 | 4.2 | 5.1 | 4.4 | 4.7 | 5.0 | 5.3 | 6.15 | 6.25 | 5.2 | 4.42 | 4.22 | 4.10 |
| 12 | 4.2 | 4.9 | 4.4 | 4.7 | 5.0 | 5.2 | 6.3 | 6.2 | 5.2 | 4.40 | 4.22 | 4.12 |
| 13 | 4.2 | 4.8 | 4.4 | 5.0 | 5.0 | 5.1 | 6.5 | 6.05 | 5.2 | 4.40 | 4.22 | 4.10 |
| 14 | 4.2 | 4.7 | 4.5 | 5.3 | 5.0 | 5.1 | 6.2 | 6.05 | 5.1 | 4.40 | 4.22 | 4.10 |
| 15 | 4.1 | 4.8 | 4.8 | 5.4 | 5.1 | 5.0 | 6.0 | 6.2 | 5.05 | 4.38 | 4.22 | 4.12 |
| 16 | 4.1 | 4.7 | 5.1 | 5.2 | 5.2 | 5.0 | 5.95 | 6.25 | 5.0 | 4.35 | 4.22 | 4.12 |
| 17 | 4.1 | 4.6 | 4.9 | 4.9 | 5.2 | 5.0 | 5.9 | 6.4 | 4.95 | 4.35 | 4.25 | 4.12 |
| 18 | 4.1 | 4.6 | 4.8 | 6.2 | 5.2 | 5.1 | 6.0 | 6.7 | 4.90 | 4.32 | 4.20 | 4.10 |
| 19 | 4.1 | 4.6 | 4.7 | 5.6 | 5.1 | 5.3 | 5.9 | 6.5 | 4.90 | 4.38 | 4.20 | 4.10 |
| 20 | 4.1 | 4.8 | 4.7 | 5.2 | 5.0 | 5.3 | 5.9 | 6.4 | 4.88 | 4.32 | 4.18 | 4.10 |
| 21 | 4.1 | 4.6 | 4.6 | 5.0 | 5.0 | 5.2 | 6.05 | 6.35 | 4.82 | 4.50 | 4.15 | 4.12 |
| 22 | 4.1 | 4.6 | 4.6 | 5.0 | 4.9 | 5.3 | 6.3 | 6.5 | 4.80 | 4.40 | 4.18 | 4.12 |
| 23 | 4.5 | 4.6 | 4.6 | 4.9 | 4.9 | 5.25 | 6.3 | 6.45 | 4.82 | 4.52 | 4.18 | 4.10 |
| 24 | 4.3 | 4.6 | 4.6 | 4.8 | 4.9 | 5.15 | 6.3 | 6.4 | 4.78 | 4.60 | 4.18 | 4.10 |
| 25 | 4.3 | 4.6 | 4.6 | 4.9 | 4.8 | 5.1 | 6.5 | 6.2 | 4.78 | 4.50 | 4.18 | 4.10 |
| 26 | 4.3 | 4.6 | 4.5 | 5.0 | 4.8 | 5.05 | 6.6 | 6.2 | 4.78 | 4.45 | 4.20 | 4.10 |
| 27 | 4.3 | 4.6 | 4.5 | 5.0 | 4.8 | 5.05 | 6.7 | 6.3 | 4.80 | 4.42 | 4.18 | 4.10 |
| 28 | 4.3 | 4.5 | 4.5 | 5.0 | 4.8 | 5.15 | 6.4 | 6.1 | 4.75 | 4.48 | 4.20 | 4.12 |
| 29 | 4.5 | 4.5 | 4.5 | 5.1 | ..... | 5.15 | 6.3 | 6.0 | 4.72 | 4.50 | 4.30 | 4.12 |
| 30 | 4.5 | 4.5 | 4.7 | 5.1 | ..... | 5.4 | 6.0 | 5.9 | 4.68 | 4.42 | 4.20 | 4.12 |
| 31 | 4.4 | ..... | 4.7 | 5.1 | ..... | 5.75 | ..... | 6.0 | ..... | 4.45 | 4.18 | ..... |

[1] Known locally as Middle Yuba River.

*Daily discharge, in second-feet, of Middle Fork of Yuba River near North San Juan, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | ..... | ..... | ..... | ..... | 2,900 | ..... | ..... | ..... | ..... | ..... | 150 | 80 |
| 2 | ..... | ..... | ..... | ..... | 2,230 | 405 | ..... | ..... | ..... | ..... | 150 | 80 |
| 3 | ..... | ..... | ..... | ..... | 1,660 | ..... | 1,970 | ..... | ..... | ..... | 141 | 80 |
| 4 | ..... | ..... | ..... | ..... | 1,520 | 1,060 | ..... | ..... | ..... | ..... | 132 | 60 |
| 5 | ..... | 74 | 280 | ..... | 1,520 | 1,390 | ..... | ..... | ..... | ..... | 132 | 60 |
| 6 | ..... | ..... | ..... | ..... | ..... | 1,970 | ..... | 1,740 | ..... | ..... | 132 | 80 |
| 7 | ..... | ..... | ..... | ..... | ..... | 3,740 | ..... | ..... | 2,510 | 605 | 132 | 80 |
| 8 | ..... | ..... | ..... | ..... | ..... | 2,510 | ..... | ..... | ..... | ..... | 122 | 80 |
| 9 | ..... | ..... | ..... | ..... | 800 | 1,890 | ..... | ..... | ..... | ..... | 118 | 80 |
| 10 | ..... | ..... | 262 | ..... | 665 | 1,390 | ..... | ..... | ..... | ..... | 113 | 80 |
| 11 | ..... | 300 | 925 | ..... | 800 | 1,270 | ..... | ..... | ..... | ..... | 113 | 80 |
| 12 | ..... | ..... | ..... | ..... | 665 | ..... | ..... | 1,660 | ..... | ..... | 113 | 80 |
| 13 | ..... | ..... | ..... | ..... | 730 | ..... | ..... | ..... | ..... | ..... | 113 | 80 |
| 14 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,060 | 360 | 113 | 80 |
| 15 | ..... | ..... | ..... | ..... | 500 | 1,060 | ..... | ..... | ..... | ..... | 113 | 60 |
| 16 | ..... | ..... | ..... | ..... | ..... | 1,060 | ..... | ..... | ..... | ..... | 113 | 60 |
| 17 | ..... | ..... | ..... | ..... | ..... | 970 | 2,060 | ..... | 1,810 | ..... | 104 | 60 |
| 18 | ..... | ..... | ..... | ..... | 500 | 665 | ..... | ..... | ..... | ..... | 104 | 60 |
| 19 | ..... | 90 | 765 | 405 | 450 | ..... | ..... | 1,590 | ..... | ..... | 104 | 60 |
| 20 | ..... | ..... | ..... | 3,960 | ..... | ..... | ..... | ..... | ..... | ..... | 102 | 60 |
| 21 | ..... | ..... | ..... | 1,270 | 405 | ..... | ..... | ..... | ..... | ..... | 100 | 60 |
| 22 | ..... | ..... | ..... | 665 | 405 | ..... | ..... | ..... | ..... | ..... | 100 | 60 |
| 23 | ..... | ..... | ..... | 450 | ..... | ..... | ..... | ..... | ..... | ..... | 100 | 60 |
| 24 | ..... | ..... | ..... | 3,310 | ..... | ..... | ..... | 1,810 | ..... | 245 | 80 | 60 |
| 25 | ..... | ..... | ..... | 3,100 | ..... | ..... | 2,230 | 1,810 | ..... | ..... | 80 | 60 |
| 26 | ..... | ..... | ..... | 1,270 | ..... | ..... | ..... | ..... | 880 | ..... | 80 | 80 |
| 27 | 72 | ..... | ..... | 800 | 450 | ..... | ..... | ..... | ..... | ..... | 80 | 80 |
| 28 | 72 | ..... | ..... | 970 | ..... | ..... | ..... | ..... | ..... | ..... | 80 | 100 |
| 29 | ..... | ..... | ..... | 3,520 | ..... | ..... | ..... | ..... | 380 | ..... | 80 | 100 |
| 30 | ..... | ..... | ..... | 6,870 | ..... | ..... | ..... | ..... | ..... | ..... | 80 | 100 |
| 31 | ..... | ..... | 280 | 7,680 | ..... | 2,320 | ..... | ..... | ..... | ..... | 80 | ..... |
| 1911–12. | | | | | | | | | | | | |
| 1 | 80 | 80 | 100 | 80 | 210 | 150 | 245 | 1,160 | 1,060 | 180 | 80 | 40 |
| 2 | 100 | 80 | 100 | 100 | 180 | 150 | 320 | 880 | 1,060 | 180 | 80 | 40 |
| 3 | 80 | 80 | 100 | 100 | 180 | 150 | 320 | 665 | 1,060 | 180 | 80 | 90 |
| 4 | 80 | 80 | 100 | 150 | 180 | 150 | 320 | 665 | 1,060 | 180 | 60 | 80 |
| 5 | 100 | 80 | 80 | 180 | 150 | 320 | 320 | 665 | 970 | 150 | 60 | 80 |
| 6 | 125 | 80 | 80 | 150 | 150 | 880 | 320 | 605 | 880 | 150 | 60 | 60 |
| 7 | 100 | 80 | 100 | 125 | 150 | 500 | 405 | 800 | 880 | 150 | 60 | 210 |
| 8 | 100 | 80 | 100 | 180 | 150 | 360 | 405 | 970 | 730 | 125 | 60 | 125 |
| 9 | 100 | 80 | 100 | 245 | 180 | 320 | 405 | 880 | 605 | 125 | 60 | 80 |
| 10 | 125 | 360 | 80 | 280 | 150 | 280 | 405 | 970 | 550 | 125 | 60 | 80 |
| 11 | 125 | 150 | 80 | 245 | 180 | 245 | 360 | 1,060 | 550 | 125 | 60 | 60 |
| 12 | 100 | 100 | 80 | 210 | 150 | 245 | 320 | 880 | 550 | 125 | 60 | 60 |
| 13 | 80 | 100 | 80 | 180 | 150 | 280 | 280 | 880 | 605 | 100 | 60 | 60 |
| 14 | 100 | 100 | 80 | 150 | 150 | 245 | 280 | 1,060 | 500 | 100 | 60 | 60 |
| 15 | 125 | 100 | 80 | 125 | 150 | 245 | 280 | 1,060 | 450 | 100 | 60 | 60 |
| 16 | 100 | 210 | 80 | 280 | 150 | 280 | 320 | 1,060 | 360 | 100 | 60 | 60 |
| 17 | 100 | 125 | 100 | 210 | 150 | 280 | 320 | 1,060 | 360 | 100 | 40 | 60 |
| 18 | 100 | 125 | 80 | 180 | 320 | 245 | 320 | 1,060 | 320 | 100 | 40 | 60 |
| 19 | 100 | 125 | 80 | 280 | 245 | 280 | 320 | 970 | 320 | 100 | 40 | 60 |
| 20 | 100 | 125 | 80 | 210 | 210 | 320 | 280 | 1,060 | 320 | 100 | 40 | 60 |
| 21 | 80 | 100 | 80 | 210 | 210 | 280 | 280 | 730 | 280 | 80 | 40 | 60 |
| 22 | 80 | 100 | 80 | 180 | 180 | 245 | 280 | 665 | 280 | 80 | 40 | 60 |
| 23 | 80 | 100 | 80 | 150 | 180 | 245 | 280 | 605 | 280 | 80 | 40 | 60 |
| 24 | 80 | 100 | 80 | 150 | 150 | 245 | 320 | 605 | 280 | 80 | 40 | 60 |
| 25 | 100 | 100 | 100 | 180 | 150 | 280 | 360 | 880 | 245 | 80 | 40 | 40 |
| 26 | 100 | 100 | 150 | 800 | 150 | 280 | 405 | 1,270 | 245 | 80 | 40 | 40 |
| 27 | 100 | 80 | 80 | 405 | 150 | 280 | 360 | 1,060 | 210 | 80 | 40 | 40 |
| 28 | 100 | 80 | 100 | 320 | 150 | 320 | 360 | 1,060 | 210 | 80 | 40 | 40 |
| 29 | 100 | 100 | 100 | 245 | 150 | 320 | 1,060 | 1,270 | 210 | 80 | 40 | 40 |
| 30 | 100 | 100 | 80 | 210 | ..... | 320 | 880 | 1,160 | 180 | 80 | 40 | 40 |
| 31 | 100 | ..... | 80 | 210 | ..... | 320 | ..... | 1,060 | ..... | 80 | 40 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Yuba River near North San Juan, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec, | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 40 | 100 | 125 | 210 | 360 | 210 | 800 | 698 | 730 | 165 | 100 | 60 |
| 2 | 40 | 100 | 100 | 180 | 320 | 210 | 765 | 665 | 730 | 150 | 90 | 60 |
| 3 | 40 | 100 | 100 | 180 | 320 | 210 | 605 | 698 | 665 | 150 | 84 | 56 |
| 4 | 40 | 125 | 125 | 180 | 280 | 210 | 800 | 840 | 635 | 156 | 84 | 56 |
| 5 | 40 | 100 | 100 | 125 | 280 | 245 | 1,270 | 1,060 | 605 | 150 | 80 | 64 |
| 6 | 40 | 1,660 | 100 | 100 | 280 | 280 | 970 | 1,270 | 578 | 130 | 80 | 64 |
| 7 | 40 | 550 | 100 | 210 | 280 | 280 | 800 | 1,330 | 665 | 125 | 76 | 60 |
| 8 | 40 | 210 | 100 | 180 | 280 | 320 | 730 | 1,220 | 525 | 125 | 64 | 64 |
| 9 | 40 | 210 | 100 | 150 | 280 | 360 | 730 | 1,970 | 450 | 120 | 64 | 44 |
| 10 | 60 | 550 | 100 | 125 | 280 | 360 | 800 | 1,520 | 405 | 105 | 64 | 44 |
| 11 | 60 | 320 | 100 | 180 | 280 | 405 | 925 | 1,020 | 360 | 105 | 64 | 44 |
| 12 | 60 | 245 | 100 | 180 | 280 | 360 | 1,060 | 970 | 360 | 100 | 64 | 40 |
| 13 | 60 | 210 | 100 | 280 | 280 | 320 | 1,270 | 840 | 360 | 100 | 64 | 40 |
| 14 | 60 | 180 | 125 | 405 | 280 | 320 | 97 | 840 | 320 | 100 | 64 | 40 |
| 15 | 40 | 210 | 210 | 450 | 320 | 280 | 800 | 970 | 300 | 96 | 64 | 44 |
| 16 | 40 | 180 | 320 | 360 | 360 | 280 | 765 | 1,020 | 280 | 90 | 64 | 44 |
| 17 | 40 | 150 | 245 | 245 | 360 | 280 | 730 | 1,160 | 262 | 90 | 70 | 44 |
| 18 | 40 | 150 | 210 | 970 | 360 | 320 | 800 | 1,520 | 245 | 84 | 60 | 40 |
| 19 | 40 | 150 | 180 | 550 | 320 | 405 | 730 | 1,270 | 245 | 96 | 60 | 40 |
| 20 | 40 | 210 | 180 | 360 | 280 | 405 | 730 | 1,160 | 238 | 84 | 56 | 40 |
| 21 | 40 | 150 | 150 | 280 | 280 | 360 | 840 | 1,110 | 217 | 125 | 50 | 44 |
| 22 | 40 | 150 | 150 | 280 | 245 | 405 | 1,060 | 1,270 | 210 | 100 | 56 | 44 |
| 23 | 125 | 150 | 150 | 245 | 245 | 382 | 1,060 | 1,220 | 217 | 130 | 56 | 40 |
| 24 | 80 | 150 | 150 | 210 | 245 | 340 | 1,060 | 1,160 | 204 | 150 | 56 | 40 |
| 25 | 80 | 150 | 150 | 245 | 210 | 320 | 1,270 | 970 | 204 | 125 | 56 | 40 |
| 26 | 80 | 150 | 125 | 280 | 210 | 300 | 1,390 | 970 | 204 | 112 | 60 | 40 |
| 27 | 80 | 150 | 125 | 280 | 210 | 300 | 1,520 | 1,060 | 210 | 105 | 56 | 40 |
| 28 | 80 | 125 | 125 | 280 | 210 | 340 | 1,160 | 880 | 195 | 120 | 60 | 44 |
| 29 | 125 | 125 | 125 | 320 | ..... | 340 | 1,060 | 800 | 186 | 125 | 80 | 44 |
| 30 | 125 | 125 | 180 | 320 | ..... | 450 | 800 | 730 | 174 | 105 | 60 | 44 |
| 31 | 100 | ..... | 180 | 320 | ..... | 635 | ..... | 800 | ..... | 112 | 56 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge for days for which gage heights are missing in August and September, 1911, estimated by comparison of record at this station with that of North Fork of Yuba River at Goodyear Bar.

*Monthly discharge of Middle Fork of Yuba River near North San Juan, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August | 150 | 80 | 108 | 6,640 | C. |
| September | 100 | 60 | 73.3 | 4,360 | B. |
| 1911–12. | | | | | |
| October | 125 | 80 | 98.1 | 6,030 | B. |
| November | 360 | 80 | 110 | 6,550 | B. |
| December | 150 | 80 | 89.4 | 5,500 | B. |
| January | 800 | 80 | 217 | 13,300 | B. |
| February | 320 | 150 | 173 | 9,950 | B. |
| March | 880 | 150 | 292 | 18,000 | A. |
| April | 1,060 | 245 | 371 | 22,100 | A. |
| May | 1,270 | 605 | 928 | 57,100 | B. |
| June | 1,060 | 180 | 520 | 30,900 | A. |
| July | 180 | 80 | 112 | 6,890 | B. |
| August | 80 | 40 | 52.3 | 3,220 | B. |
| September | 210 | 40 | 65.5 | 3,900 | B. |
| The year | 1,270 | 40 | 253 | 183,000 | |
| 1912–13. | | | | | |
| October | 125 | 40 | 59.8 | 3,680 | B. |
| November | 1,660 | 100 | 238 | 14,200 | B. |
| December | 320 | 100 | 143 | 8,790 | B. |
| January | 970 | 100 | 280 | 17,200 | A. |
| February | 360 | 210 | 283 | 15,700 | A. |
| March | 635 | 210 | 330 | 20,300 | A. |
| April | 1,520 | 605 | 942 | 56,100 | B. |
| May | 1,970 | 665 | 1,060 | 65,200 | B. |
| June | 730 | 174 | 366 | 21,800 | A. |
| July | 165 | 84 | 117 | 7,190 | B. |
| August | 100 | 50 | 66.5 | 4,090 | B. |
| September | 64 | 40 | 46.9 | 2,790 | B. |
| The year | 1,970 | 40 | 328 | 237,000 | |

### YUBA RIVER NEAR SMARTSVILLE, CAL.

LOCATION.—In sec. 22, T. 16 N., R. 6 E., at the Narrows, 1 mile north of Smartsville, 1 mile below mouth of Deer Creek, 6½ miles below mouth of South Fork, 7 miles above mouth of Dry Creek, and 18 miles above the junction with Feather River.

RECORDS AVAILABLE.—June 2, 1903, to September 30, 1913.

DRAINAGE AREA.—1,220 square miles.

GAGE.—Staff in three sections, bolted to solid rock on left bank. Because of gradual erosion of channel datum of gage was lowered 10 feet August 1, 1906.

CHANNEL.—Gravel and small bowlders; shifting. As the result of extensive hydraulic mining in the early days the channel has been filled with an enormous quantity of tailings. At the station the depth of mining débris is estimated to be more than 80 feet.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

DIVERSIONS.—Water is diverted for power and irrigation above the station. Several small glacial lakes near the headwaters of the South Fork of Yuba River are utilized as storage reservoirs. Part of this water is diverted into the Bear and American River drainage basins.

ACCURACY.—Results, except at high stages, good. Conditions poor for making accurate discharge measurements at high stages, owing to shifting channel and torrential nature of stream.

*Discharge measurements of Yuba River near Smartsville, Cal., during the year ending Sept. 30, 1913.*

[J. R. McKeel, observer.]

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 20 | Lasley Lee | 3.62 | 296 | Jan. 11 | E. C. Murphy | 4.40 | 743 |
| 21 | J. R. McKeel | 3.61 | 296 | 18 | Lasley Lee | 9.75 | 9,660 |
| Nov. 17 | do | 4.50 | 787 | 26 | do | 5.28 | 1,450 |

*Daily gage height, in feet, of Yuba River near Smartsville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.55 | 3.85 | 4.1 | 5.0 | 5.6 | 4.9 | 7.8 | 7.3 | 7.6 | 4.45 | 3.8 | 3.40 |
| 2 | 3.55 | 3.9 | 4.1 | 4.7 | 5.6 | 4.85 | 7.7 | 7.4 | 7.4 | 4.4 | 3.8 | 3.40 |
| 3 | 3.55 | 3.9 | 4.1 | 4.6 | 5.5 | 4.8 | 7.0 | 7.2 | 7.3 | 4.35 | 3.75 | 3.35 |
| 4 | 3.55 | 3.95 | 4.1 | 4.6 | 5.4 | 4.8 | 7.6 | 7.9 | 7.0 | 4.3 | 3.7 | 3.35 |
| 5 | 3.55 | 4.0 | 4.05 | 4.3 | 5.3 | 4.9 | 8.5 | 10.0 | 6.9 | 4.2 | 3.6 | 3.35 |
| 6 | 3.55 | 10.0 | 4.0 | 4.1 | 5.2 | 5.0 | 7.9 | 8.9 | 6.5 | 4.1 | 3.65 | 3.35 |
| 7 | 3.55 | 8.5 | 4.0 | 4.6 | 5.2 | 5.1 | 7.7 | 8.6 | 6.4 | 4.05 | 3.6 | 3.35 |
| 8 | 3.55 | 7.0 | 4.0 | 4.7 | 5.2 | 5.4 | 7.3 | 8.6 | 6.3 | 4.0 | 3.55 | 3.35 |
| 9 | 3.55 | 5.7 | 4.0 | 4.5 | 5.2 | 5.5 | 7.4 | 8.7 | 6.2 | 4.0 | 3.5 | 3.30 |
| 10 | 3.55 | 7.3 | 4.0 | 4.5 | 5.2 | 5.6 | 7.6 | 10.0 | 6.0 | 3.95 | 3.5 | 3.30 |
| 11 | 3.6 | 6.1 | 4.0 | 4.4 | 5.2 | 5.8 | 8.3 | 8.3 | 5.8 | 3.95 | 3.5 | 3.28 |
| 12 | 3.65 | 5.2 | 4.0 | 4.5 | 5.2 | 5.9 | 8.1 | 8.3 | 5.7 | 3.9 | 3.5 | 3.27 |
| 13 | 3.65 | 4.9 | 4.0 | 5.4 | 5.3 | 5.6 | 8.5 | 8.4 | 5.6 | 3.9 | 3.47 | 3.27 |
| 14 | 3.65 | 4.8 | 4.05 | 8.5 | 5.3 | 5.5 | 8.9 | 8.4 | 5.4 | 3.9 | 3.46 | 3.27 |
| 15 | 3.6 | 4.8 | 5.2 | 8.1 | 5.4 | 5.4 | 7.6 | 8.0 | 5.3 | 3.9 | 3.45 | 3.27 |
| 16 | 3.6 | 4.7 | 5.3 | 7.0 | 5.4 | 5.3 | 7.4 | 8.2 | 5.2 | 3.9 | 3.44 | 3.27 |
| 17 | 3.6 | 4.5 | 5.1 | 6.1 | 5.6 | 5.4 | 7.3 | 8.4 | 5.2 | 3.9 | 3.40 | 3.25 |
| 18 | 3.65 | 4.5 | 4.9 | 9.8 | 5.7 | 6.0 | 7.4 | 8.6 | 5.1 | 3.9 | 3.40 | 3.25 |
| 19 | 3.65 | 5.0 | 4.75 | 7.8 | 5.5 | 5.8 | 7.4 | 8.9 | 5.0 | 3.9 | 3.40 | 3.25 |
| 20 | 3.6 | 4.9 | 4.6 | 6.2 | 5.4 | 5.9 | 7.4 | 9.0 | 4.9 | 3.9 | 3.40 | 3.25 |
| 21 | 3.6 | 4.6 | 4.55 | 5.8 | 5.3 | 6.1 | 7.8 | 9.3 | 4.8 | 3.9 | 3.40 | 3.25 |
| 22 | 3.6 | 4.5 | 4.5 | 5.6 | 5.2 | 7.2 | 8.5 | 9.4 | 4.7 | 3.9 | 3.40 | 3.25 |
| 23 | 4.4 | 4.5 | 4.45 | 5.4 | 5.1 | 6.2 | 8.1 | 9.4 | 4.8 | 3.9 | 3.40 | 3.25 |
| 24 | 4.1 | 4.45 | 4.3 | 5.1 | 5.1 | 6.0 | 8.6 | 9.3 | 4.8 | 4.2 | 3.40 | 3.25 |
| 25 | 3.8 | 4.4 | 4.3 | 5.2 | 5.2 | 5.8 | 8.7 | 8.8 | 4.8 | 3.95 | 3.40 | 3.25 |
| 26 | 3.9 | 4.3 | 4.2 | 5.3 | 5.1 | 5.7 | 8.7 | 8.6 | 4.7 | 3.95 | 3.40 | 3.25 |
| 27 | 3.9 | 4.2 | 4.2 | 5.3 | 5.0 | 5.7 | 9.9 | 8.2 | 4.7 | 3.9 | 3.40 | 3.25 |
| 28 | 3.9 | 4.2 | 4.2 | 5.4 | 5.0 | 5.7 | 8.6 | 8.2 | 4.65 | 3.9 | 3.40 | 3.25 |
| 29 | 3.9 | 4.15 | 4.2 | 5.4 | ..... | 5.6 | 8.4 | 8.1 | 4.6 | 3.9 | 3.40 | 3.25 |
| 30 | 4.1 | 4.15 | 4.35 | 5.4 | ..... | 6.1 | 7.9 | 8.0 | 4.5 | 3.9 | 3.40 | 3.30 |
| 31 | 4.0 | ..... | 4.5 | 5.4 | ..... | 7.0 | ..... | 7.8 | ..... | 3.85 | 3.40 | ..... |

*Daily discharge, in second-feet, of Yuba River near Smartsville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 275 | 415 | 550 | 1,200 | 1,750 | 1,120 | 5,100 | 4,120 | 4,690 | 775 | 400 | 260 |
| 2 | 275 | 440 | 550 | 960 | 1,750 | 1,080 | 4,900 | 4,310 | 4,310 | 740 | 400 | 260 |
| 3 | 275 | 440 | 550 | 885 | 1,660 | 1,040 | 3,580 | 3,940 | 4,130 | 705 | 380 | 245 |
| 4 | 275 | 468 | 550 | 885 | 1,560 | 1,040 | 4,700 | 5,300 | 3,600 | 670 | 360 | 245 |
| 5 | 275 | 495 | 522 | 675 | 1,470 | 1,120 | 6,550 | 10,000 | 3,430 | 610 | 325 | 245 |
| 6 | 275 | 10,000 | 495 | 550 | 1,380 | 1,200 | 5,300 | 7,420 | 2,820 | 555 | 342 | 245 |
| 7 | 275 | 6,550 | 495 | 885 | 1,380 | 1,290 | 4,900 | 7,200 | 2,680 | 528 | 325 | 245 |
| 8 | 275 | 3,580 | 495 | 960 | 1,380 | 1,560 | 4,120 | 6,760 | 2,550 | 500 | 308 | 245 |
| 9 | 275 | 1,850 | 495 | 810 | 1,380 | 1,660 | 4,310 | 6,980 | 2,420 | 500 | 290 | 230 |
| 10 | 275 | 4,120 | 495 | 810 | 1,380 | 1,750 | 4,700 | 10,000 | 2,180 | 475 | 290 | 230 |
| 11 | 295 | 2,290 | 495 | 740 | 1,380 | 1,950 | 6,130 | 6,130 | 1,960 | 475 | 290 | 226 |
| 12 | 318 | 1,380 | 495 | 810 | 1,380 | 2,060 | 5,710 | 6,130 | 1,860 | 450 | 290 | 224 |
| 13 | 318 | 1,120 | 495 | 1,560 | 1,470 | 1,750 | 6,550 | 6,350 | 1,760 | 450 | 281 | 224 |
| 14 | 318 | 1,040 | 522 | 6,550 | 1,470 | 1,660 | 7,420 | 6,350 | 1,560 | 450 | 278 | 224 |
| 15 | 295 | 1,040 | 1,380 | 5,710 | 1,560 | 1,560 | 4,700 | 5,500 | 1,470 | 450 | 275 | 224 |
| 16 | 295 | 960 | 1,470 | 3,580 | 1,560 | 1,470 | 4,310 | 5,920 | 1,380 | 450 | 272 | 224 |
| 17 | 295 | 810 | 1,290 | 2,290 | 1,750 | 1,560 | 4,120 | 6,350 | 1,380 | 450 | 260 | 220 |
| 18 | 318 | 810 | 1,120 | 9,530 | 1,850 | 2,170 | 4,310 | 6,790 | 1,290 | 450 | 260 | 220 |
| 19 | 318 | 1,200 | 1,000 | 5,100 | 1,660 | 1,950 | 4,310 | 7,470 | 1,200 | 450 | 260 | 220 |
| 20 | 295 | 1,120 | 885 | 2,410 | 1,560 | 2,060 | 4,310 | 7,700 | 1,120 | 450 | 260 | 220 |
| 21 | 295 | 885 | 848 | 1,950 | 1,470 | 2,290 | 5,100 | 8,390 | 1,040 | 450 | 260 | 220 |
| 22 | 295 | 810 | 810 | 1,750 | 1,380 | 3,940 | 6,550 | 8,620 | 960 | 450 | 260 | 220 |
| 23 | 740 | 810 | 775 | 1,560 | 1,290 | 2,410 | 5,710 | 8,620 | 1,040 | 450 | 260 | 220 |
| 24 | 550 | 775 | 675 | 1,230 | 1,290 | 2,170 | 6,760 | 8,390 | 1,040 | 610 | 260 | 220 |
| 25 | 390 | 740 | 675 | 1,380 | 1,380 | 1,950 | 6,980 | 7,240 | 1,040 | 475 | 260 | 220 |
| 26 | 440 | 675 | 610 | 1,470 | 1,290 | 1,850 | 6,980 | 6,790 | 960 | 475 | 260 | 220 |
| 27 | 440 | 610 | 610 | 1,470 | 1,200 | 1,850 | 9,780 | 5,920 | 960 | 450 | 260 | 220 |
| 28 | 440 | 610 | 610 | 1,560 | 1,200 | 1,850 | 6,760 | 5,920 | 920 | 450 | 260 | 220 |
| 29 | 440 | 580 | 610 | 1,560 | ..... | 1,750 | 6,340 | 5,710 | 880 | 450 | 260 | 220 |
| 30 | 550 | 580 | 708 | 1,560 | ..... | 2,290 | 5,300 | 5,500 | 810 | 450 | 260 | 230 |
| 31 | 495 | ..... | 810 | 1,560 | ..... | 3,580 | ..... | 5,090 | ..... | 425 | 260 | ..... |

NOTE.—Discharge determined from two rating curves well defined below and fairly well defined above 1,000 second-feet, applicable Oct. 1, 1912, to May 10, 1913, and May 11 to Sept. 30, 1913.

*Monthly discharge of Yuba River near Smartsville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 740 | 275 | 351 | 21,600 | A. |
| November | 10,000 | 415 | 1,570 | 93,400 | B. |
| December | 1,470 | 495 | 713 | 43,800 | A. |
| January | 9,530 | 550 | 2,060 | 127,000 | B. |
| February | 1,850 | 1,200 | 1,470 | 81,600 | B. |
| March | 3,940 | 1,040 | 1,840 | 113,000 | B. |
| April | 9,780 | 3,580 | 5,540 | 330,000 | B. |
| May | 10,000 | 3,940 | 6,670 | 410,000 | B. |
| June | 4,690 | 310 | 1,910 | 114,000 | B. |
| July | 775 | 425 | 507 | 31,200 | A. |
| August | 400 | 260 | 291 | 17,900 | A. |
| September | 260 | 220 | 230 | 13,700 | A. |
| The year | 10,000 | 220 | 1,930 | 1,400,000 | |

### NORTH FORK OF YUBA RIVER[1] NEAR SIERRA CITY, CAL.

LOCATION.—At footbridge 1½ miles west of Sierra City, in Tahoe National Forest, 2½ miles below junction of North and South Forks of North Fork of Yuba River.

RECORDS AVAILABLE.—November 1, 1911, to September 30, 1913, when station was discontinued. Record is fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to upstream end of left abutment of footbridge.

CHANNEL.—Bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

COOPERATION.—Maintained in cooperation with United States Forest Service.

Sufficient measurements have not yet been made to define a rating curve.

The following discharge measurement was made by H. J. Tompkins: August 17, 1913: Gage height, 1.82 feet; discharge, 63 second-feet.

*Daily gage height, in feet, of North Fork of Yuba River near Sierra City, Cal., for the year ending Sept. 30, 1913.*

| Date. | Oct. | Nov. | Apr. | May. | June. | July. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | | | 2.4 | | | | |
| 2 | 1.85 | | | | | | |
| 3 | | 2.3 | | | | | |
| 4 | | | 2.6 | | | | |
| 5 | | | | 3.3 | | | |
| 6 | 1.85 | | | | 2.3 | 2.1 | |
| 7 | 1.9 | | 2.8 | | | | 1.9 |
| 8 | | | | | 2.45 | | 1.8 |
| 9 | | | | | | | |
| 10 | | | 2.85 | | | | 1.8 |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | 1.9 |
| 14 | | | | 3.0 | 2.55 | | 1.7 |
| 15 | | | | | | | |
| 16 | 1.8 | | | | | | |
| 17 | | 2.4 | | | 2.25 | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | 2.5 | | | | | |
| 22 | | | | 3.5 | 2.2 | | |
| 23 | 2.1 | | | | | | |
| 24 | | 2.4 | | | | | |
| 25 | | | | | | | |
| 26 | | | | | | | 1.9 |
| 27 | 2.1 | | | | | | |
| 28 | 2.2 | 2.5 | 3.1 | | | | |
| 29 | | | | 3.7 | 2.0 | | |
| 30 | | | | | | | |
| 31 | | | | | | | |

[1] Known locally as North Yuba River.

### NORTH FORK OF YUBA RIVER[1] AT GOODYEAR BAR, CAL.

LOCATION.—In the E. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., at highway bridge at Goodyear Bar, in Tahoe National Forest. North Fork of North Fork of Yuba River enters at Downieville, 4 miles above, and Rock and Goodyear creeks one-eighth and one-fourth mile, respectively, below the station.

RECORDS AVAILABLE.—October 31, 1910, to September 30, 1913.

DRAINAGE AREA.—214 square miles.

GAGE.—Vertical staff in two sections on left bank. Lower section is fastened to old piling under bridge; upper section is bolted to left abutment of bridge.

CHANNEL.—Solid rock, small bowlders, and gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curve well defined; results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

The following discharge measurements was made by H. J. Tompkins: August 18, 1913: Gage height, 3.40 feet; discharge, 147 second-feet.

*Daily gage height, in feet, of North Fork of Yuba River at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 3.4 | 3.45 | 3.5 | 3.7 | 3.6 | 4.6 | 4.8 | 5.5 | 3.95 | 3.6 | 3.4 |
| 2 | 3.3 | 3.4 | 3.45 | 3.5 | 3.7 | 3.6 | 4.5 | 4.7 | 5.4 | 3.9 | 3.6 | 3.4 |
| 3 | 3.3 | 3.4 | 3.4 | 3.5 | 3.7 | 3.6 | 4.4 | 4.8 | 5.3 | 3.9 | 3.5 | 3.4 |
| 4 | 3.3 | 3.4 | 3.4 | 3.4 | 3.7 | 3.6 | 4.5 | 5.2 | 5.3 | 3.9 | 3.5 | 3.35 |
| 5 | 3.35 | 3.45 | 3.35 | 3.3 | 3.65 | 3.7 | 4.9 | 5.7 | 5.2 | 3.8 | 3.5 | 3.35 |
| 6 | 3.35 | 5.45 | 3.35 | 3.4 | 3.65 | 3.8 | 4.6 | 5.8 | 6.3 | 3.8 | 3.5 | 3.35 |
| 7 | 3.35 | 4.35 | 3.4 | 3.7 | 3.65 | 3.8 | 4.5 | 6.0 | 5.0 | 3.75 | 3.5 | 3.35 |
| 8 | 3.35 | 4.0 | 3.4 | 3.5 | 3.65 | 3.85 | 4.5 | 5.7 | 4.9 | 3.75 | 3.5 | 3.35 |
| 9 | 3.35 | 4.1 | 3.4 | 3.5 | 3.7 | 3.9 | 4.5 | 5.8 | 4.8 | 3.75 | 3.45 | 3.35 |
| 10 | 3.35 | 4.1 | 3.4 | 3.6 | 3.7 | 4.0 | 4.7 | 5.6 | 4.7 | ..... | 3.4 | 3.35 |
| 11 | 3.35 | 3.9 | 3.4 | 3.55 | 3.7 | 4.0 | 5.0 | 5.4 | 4.6 | ..... | 3.4 | 3.35 |
| 12 | 3.35 | 3.8 | 3.4 | 3.55 | 3.7 | 3.95 | 5.0 | 5.3 | 4.5 | 3.7 | ..... | 3.35 |
| 13 | 3.3 | 3.7 | 3.45 | 3.6 | 3.65 | 3.9 | 5.0 | 5.2 | 4.5 | 3.7 | 3.4 | 3.35 |
| 14 | 3.3 | 3.7 | 3.6 | 3.6 | 3.75 | 3.8 | 4.8 | 5.4 | 4.5 | 3.65 | 3.4 | 3.35 |
| 15 | ..... | 3.65 | 3.6 | 3.6 | 3.8 | 3.8 | 4.6 | 5.3 | 4.4 | 3.65 | 3.4 | 3.35 |
| 16 | ..... | 3.65 | 3.6 | 3.5 | 3.9 | 3.8 | 4.6 | 5.6 | 4.3 | 3.6 | 3.4 | 3.3 |
| 17 | 3.3 | 3.6 | 3.6 | 3.6 | 3.9 | 3.9 | 4.65 | 5.6 | 4.3 | 3.6 | 3.4 | 3.3 |
| 18 | 3.3 | 3.6 | 3.6 | 4.0 | 3.9 | 3.9 | 4.6 | 6.1 | 4.2 | 3.6 | 3.4 | 3.3 |
| 19 | 3.3 | 3.7 | 3.5 | 3.8 | 3.85 | 3.95 | 4.6 | 5.8 | 4.2 | 3.6 | 3.4 | 3.3 |
| 20 | 3.3 | 3.55 | 3.5 | 3.7 | 3.8 | 3.9 | 4.7 | 5.9 | 4.2 | 3.7 | 3.4 | 3.3 |
| 21 | 3.3 | 3.55 | 3.4 | 3.6 | 3.75 | 3.9 | 4.9 | 6.0 | 4.2 | 3.7 | 3.4 | 3.3 |
| 22 | 3.35 | 3.55 | 3.4 | 3.55 | 3.7 | 3.9 | 5.0 | 5.9 | 4.2 | 3.7 | ..... | 3.3 |
| 23 | 3.4 | 3.55 | 3.4 | 3.5 | 3.7 | 3.8 | 5.0 | 6.2 | ..... | 3.8 | 3.4 | 3.3 |
| 24 | 3.4 | 3.5 | 3.4 | 3.55 | 3.7 | 3.8 | 5.3 | 6.2 | 4.2 | 3.7 | 3.4 | 3.3 |
| 25 | 3.45 | 3.5 | 3.4 | 3.6 | 3.7 | 3.75 | 5.5 | 6.0 | 4.2 | 3.7 | 3.4 | 3.3 |
| 26 | 3.4 | 3.5 | 3.4 | 3.6 | 3.7 | 3.75 | 5.6 | 6.0 | 4.2 | 3.7 | 3.4 | 3.3 |
| 27 | 3.4 | 3.5 | 3.4 | 3.6 | 3.65 | 3.75 | 5.5 | 5.6 | 4.2 | 3.8 | 3.4 | 3.3 |
| 28 | 3.4 | 3.5 | 3.4 | 3.6 | 3.6 | 3.8 | 5.3 | 5.5 | 4.1 | 3.7 | 3.4 | 3.3 |
| 29 | 3.4 | 3.45 | 3.4 | 3.6 | ..... | 3.8 | 5.1 | 5.6 | 4.1 | 3.6 | 3.4 | 3.3 |
| 30 | 3.4 | 3.45 | 3.5 | 3.6 | ..... | 4.0 | 5.0 | 5.6 | 4.0 | 3.6 | 3.4 | 3.3 |
| 31 | 3.4 | ..... | 3.5 | 3.65 | ..... | 4.3 | ..... | 5.6 | ..... | 3.6 | 3.4 | ..... |

[1] Known locally as North Yuba River.

*Daily discharge, in second-feet, of North Fork of Yuba River at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 116 | 146 | 163 | 180 | 260 | 220 | 790 | 945 | 1,600 | 380 | 220 | 146 |
| 2 | 116 | 146 | 163 | 180 | 260 | 220 | 715 | 865 | 1,500 | 355 | 220 | 146 |
| 3 | 116 | 146 | 146 | 180 | 260 | 220 | 645 | 945 | 1,400 | 355 | 180 | 146 |
| 4 | 116 | 146 | 146 | 146 | 260 | 220 | 715 | 1,300 | 1,400 | 355 | 180 | 131 |
| 5 | 131 | 163 | 131 | 116 | 240 | 260 | 1,030 | 1,820 | 1,300 | 305 | 180 | 131 |
| 6 | 131 | 1,550 | 131 | 146 | 240 | 305 | 790 | 1,930 | 2,530 | 305 | 180 | 131 |
| 7 | 131 | 612 | 146 | 260 | 240 | 305 | 715 | 2,170 | 1,120 | 282 | 180 | 131 |
| 8 | 131 | 405 | 146 | 180 | 240 | 330 | 715 | 1,820 | 1,030 | 282 | 180 | 131 |
| 9 | 131 | 460 | 146 | 180 | 260 | 355 | 715 | 1,930 | 945 | 282 | 163 | 131 |
| 10 | 131 | 460 | 146 | 220 | 260 | 405 | 865 | 1,710 | 865 | 274 | 146 | 131 |
| 11 | 131 | 355 | 146 | 200 | 260 | 405 | 1,120 | 1,500 | 790 | 267 | 146 | 131 |
| 12 | 131 | 305 | 146 | 200 | 260 | 380 | 1,120 | 1,400 | 715 | 260 | 146 | 131 |
| 13 | 116 | 260 | 163 | 220 | 240 | 355 | 1,120 | 1,300 | 715 | 260 | 146 | 131 |
| 14 | 116 | 260 | 220 | 220 | 282 | 305 | 945 | 1,500 | 715 | 240 | 146 | 131 |
| 15 | 116 | 240 | 220 | 220 | 305 | 305 | 790 | 1,400 | 645 | 240 | 14[illegible] | 131 |
| 16 | 116 | 240 | 220 | 180 | 355 | 305 | 790 | 1,710 | 580 | 220 | 14[illegible] | 1[illegible] |
| 17 | 116 | 220 | 220 | 220 | 355 | 355 | 828 | 1,710 | 580 | 220 | 14[illegible] | [illegible] |
| 18 | 116 | 220 | 220 | 405 | 355 | 355 | 790 | 2,290 | 520 | 220 | 146 | 116 |
| 19 | 116 | 260 | 180 | 305 | 330 | 380 | 790 | 1,930 | 520 | 220 | 146 | 116 |
| 20 | 116 | 200 | 180 | 260 | 305 | 355 | 790 | 2,050 | 520 | 260 | 146 | 116 |
| 21 | 116 | 200 | 146 | 220 | 282 | 355 | 1,030 | 2,170 | 520 | 260 | 146 | 116 |
| 22 | 131 | 200 | 146 | 200 | 260 | 355 | 1,120 | 2,050 | 520 | 260 | 146 | 116 |
| 23 | 146 | 200 | 146 | 180 | 260 | 305 | 1,120 | 2,410 | 520 | 305 | 146 | 116 |
| 24 | 146 | 180 | 146 | 200 | 260 | 305 | 1,400 | 2,410 | 520 | 260 | 146 | 116 |
| 25 | 163 | 180 | 146 | 220 | 260 | 282 | 1,600 | 2,170 | 520 | 260 | 146 | 116 |
| 26 | 146 | 180 | 146 | 220 | 260 | 282 | 1,710 | 2,170 | 520 | 260 | 146 | 116 |
| 27 | 146 | 180 | 146 | 220 | 240 | 282 | 1,600 | 1,710 | 520 | 305 | 146 | 116 |
| 28 | 146 | 180 | 146 | 220 | 220 | 305 | 1,400 | 1,600 | 460 | 260 | 146 | 116 |
| 29 | 146 | 163 | 146 | 220 | ..... | 305 | 1,210 | 1,710 | 460 | 220 | 146 | 116 |
| 30 | 146 | 163 | 180 | 220 | ..... | 405 | 1,120 | 1,710 | 405 | 220 | 146 | 116 |
| 31 | 146 | ..... | 180 | 240 | ..... | 580 | ..... | 1,710 | ..... | 220 | 146 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days for which gage heights are missing.

*Monthly discharge of North Fork of Yuba River at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 214 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 163 | 116 | 130 | 0.607 | 0.70 | 7,990 | B. |
| November | 1,550 | 146 | 287 | 1.34 | 1.50 | 17,100 | B. |
| December | 220 | 131 | 163 | .762 | .88 | 10,000 | A. |
| January | 405 | 116 | 212 | .991 | 1.14 | 13,000 | A. |
| February | 355 | 220 | 272 | 1.27 | 1.32 | 15,100 | A. |
| March | 580 | 220 | 326 | 1.52 | 1.75 | 20,000 | A. |
| April | 1,710 | 645 | 1,000 | 4.67 | 5.21 | 59,500 | A. |
| May | 2,410 | 865 | 1,740 | 8.13 | 9.37 | 107,000 | A. |
| June | 2,530 | 405 | 832 | 3.89 | 4.34 | 49,500 | B. |
| July | 380 | 220 | 271 | 1.27 | 1.46 | 16,700 | A. |
| August | 220 | 146 | 158 | .738 | .85 | 9,720 | B. |
| September | 146 | 116 | 125 | .584 | .65 | 7,440 | B. |
| The year | 2,530 | 116 | 461 | 2.15 | 29.17 | 333,000 | |

### NORTH FORK OF NORTH FORK OF YUBA RIVER[1] AT DOWNIEVILLE, CAL.

LOCATION.—In the NE. ¼ NW. ¼ sec. 35, T. 20 N., R. 10 E., at upper highway bridge at Downieville, 500 feet above dam, and one-fourth mile above junction with North Fork of Yuba River. Middle Fork of North Fork enters 1¼ miles and East Fork of North Fork one-eighth mile above the station.

RECORDS AVAILABLE.—November 1, 1910, to September 30, 1913.

DRAINAGE AREA.—71.2 square miles.

GAGE.—Vertical staff fastened to right abutment of bridge.

CHANNEL.—Gravel and small bowlders; appears permanent.

DISCHARGE MEASUREMENTS.—Usually made from bridge just above mouth or by wading.

WINTER FLOW.—Discharge relation affected by ice for short periods.

DIVERSIONS.—The intake of the municipal water system of Downieville is above the station.

ACCURACY.—Gage-height record considered very reliable and rating curve well defined; results excellent.

COOPERATION.—Gage-height record furnished by John T. Mason.

The following discharge measurement was made by H. J. Tompkins: August 17, 1913—Gage height, 2.70 feet; discharge, 60 second-feet.

*Daily gage height, in feet, of North Fork of North Fork of Yuba River at Downieville, Cal., for the year ending Sept. 30, 1913.*

[J. T. Mason, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.8 | 3.3 | 3.5 | 3.8 | 3.05 | 2.8 | 2.67 |
| 2 | 2.6 | 2.6 | 2.7 | 2.78 | 2.9 | 2.8 | 3.3 | 3.55 | 3.75 | 3.0 | 2.8 | 2.67 |
| 3 | 2.6 | 2.68 | 2.7 | 2.72 | 2.8 | 2.9 | 3.32 | 3.55 | 3.75 | 3.0 | 2.8 | 2.67 |
| 4 | 2.6 | 2.62 | 2.7 | 2.7 | 2.8 | 2.82 | 3.38 | 3.65 | 3.68 | 3.02 | 2.79 | 2.67 |
| 5 | 2.6 | 2.65 | 2.7 | 2.7 | 2.85 | 2.8 | 3.6 | 3.85 | 3.7 | 3.0 | 2.77 | 2.67 |
| 6 | 2.6 | 3.6 | 2.65 | 2.7 | 2.9 | 2.9 | 3.4 | 3.95 | 4.05 | 3.0 | 2.77 | 2.97 |
| 7 | 2.6 | 3.3 | 2.65 | 2.7 | 2.9 | 3.02 | 3.4 | 4.15 | 3.68 | 3.0 | 2.72 | 2.67 |
| 8 | 2.6 | 3.05 | 2.65 | 2.7 | 2.9 | 3.1 | 3.45 | 3.95 | 3.55 | 3.0 | 2.7 | 2.67 |
| 9 | 2.6 | 3.15 | 2.6 | ..... | 2.9 | 3.1 | 3.45 | 4.5 | 3.48 | 2.98 | 2.7 | 2.69 |
| 10 | 2.6 | 3.25 | 2.6 | ..... | 2.9 | 3.1 | 3.5 | 3.95 | 3.42 | 2.95 | 2.7 | 2.65 |
| 11 | 2.6 | 3.05 | 2.65 | 2.8 | 2.9 | 3.2 | 3.7 | 3.8 | 3.4 | 2.95 | 2.7 | 2.62 |
| 12 | 2.6 | 3.0 | 2.65 | 2.8 | 2.9 | 3.1 | 3.75 | 3.75 | 3.4 | 2.92 | 2.7 | 2.6 |
| 13 | 2.57 | 2.95 | 2.65 | 2.8 | 2.98 | 3.1 | 3.7 | 3.7 | 3.4 | 2.9 | 2.7 | 2.6 |
| 14 | 2.55 | 2.9 | 2.68 | 2.8 | 3.0 | 3.0 | 3.6 | 3.68 | 3.35 | 2.9 | 2.7 | 2.6 |
| 15 | 2.55 | 2.9 | 2.78 | ..... | 3.1 | 3.0 | 3.5 | 3.8 | 3.3 | 2.9 | 2.7 | 2.58 |
| 16 | 2.55 | 2.88 | 2.8 | ..... | 3.1 | 3.0 | 3.45 | 4.0 | 3.3 | 2.9 | 2.7 | 2.59 |
| 17 | 2.55 | 2.88 | 2.8 | ..... | 3.1 | 3.0 | 3.42 | 3.95 | 3.3 | 2.9 | 2.7 | 2.59 |
| 18 | 2.55 | 2.85 | 2.75 | 3.01 | 3.05 | 3.05 | 3.5 | 4.25 | 3.22 | 2.9 | 2.7 | 2.58 |
| 19 | 2.57 | 2.9 | 2.7 | 3.0 | 3.0 | 3.1 | 3.42 | 4.05 | 3.2 | 2.9 | 2.7 | 2.58 |
| 20 | 2.57 | 2.82 | 2.7 | 2.9 | 3.0 | 3.1 | 3.48 | 4.02 | 3.2 | 2.9 | 2.7 | 2.58 |
| 21 | 2.55 | 2.8 | 2.7 | 2.8 | 2.9 | 3.02 | 3.58 | 4.15 | 3.2 | 2.9 | 2.7 | 2.58 |
| 22 | 2.62 | 2.8 | 2.7 | 2.8 | 2.9 | 3.0 | 3.68 | 4.15 | 3.2 | 2.9 | 2.7 | 2.58 |
| 23 | 2.68 | 2.8 | 2.7 | 2.8 | 2.9 | 3.0 | 3.7 | 4.15 | 3.2 | 2.9 | 2.7 | 2.58 |
| 24 | 2.62 | 2.8 | 2.7 | 2.8 | 2.9 | 3.0 | 3.75 | 4.15 | 3.2 | 2.9 | 2.68 | 2.58 |
| 25 | 2.65 | 2.8 | 2.7 | 2.8 | 2.9 | 3.0 | 3.9 | 4.0 | 3.2 | 2.9 | 2.67 | 2.58 |
| 26 | 2.7 | 2.8 | 2.7 | 2.8 | 2.9 | 3.0 | 4.05 | 4.1 | 3.2 | 2.9 | 2.67 | 2.58 |
| 27 | 2.7 | 2.8 | 2.7 | 2.8 | 2.8 | 2.9 | 3.85 | 3.95 | 3.2 | 2.9 | 2.74 | 2.58 |
| 28 | 2.7 | 2.8 | 2.7 | 2.8 | 2.8 | 2.9 | 3.85 | 3.85 | 3.12 | 2.9 | 2.72 | 2.58 |
| 29 | 2.7 | 2.8 | 2.7 | 2.8 | ..... | 2.98 | 3.75 | 3.8 | 3.1 | 2.9 | 2.7 | 2.58 |
| 30 | 2.62 | 2.8 | 2.78 | 2.8 | ..... | 3.15 | 3.6 | 3.8 | 3.1 | 2.86 | 2.67 | 2.58 |
| 31 | 2.6 | ..... | 2.78 | 2.8 | ..... | 3.3 | ..... | 3.9 | ..... | 2.81 | 2.67 | ..... |

NOTE.—Discharge relation affected by ice Jan. 5–13.

[1] Known locally as North Fork of North Yuba River.

*Daily discharge, in second-feet, of North Fork of North Fork of Yuba River at Downieville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42 | 42 | 57 | 78 | 78 | 78 | 250 | 355 | 550 | 148 | 78 | 52 |
| 2 | 42 | 42 | 57 | 74 | 103 | 78 | 250 | 385 | 515 | 130 | 78 | 52 |
| 3 | 42 | 54 | 57 | 61 | 78 | 103 | 260 | 385 | 515 | 130 | 78 | 52 |
| 4 | 42 | 45 | 57 | 57 | 78 | 83 | 290 | 448 | 467 | 137 | 76 | 52 |
| 5 | 42 | 50 | 57 | 50 | 90 | 78 | 415 | 585 | 480 | 130 | 72 | 52 |
| 6 | 42 | 415 | 50 | 45 | 103 | 103 | 300 | 655 | 730 | 130 | 72 | 52 |
| 7 | 42 | 250 | 50 | 40 | 103 | 137 | 300 | 815 | 467 | 130 | 61 | 52 |
| 8 | 42 | 148 | 50 | 40 | 103 | 165 | 328 | 655 | 385 | 130 | 57 | 52 |
| 9 | 42 | 185 | 42 | 35 | 103 | 165 | 328 | 1,150 | 344 | 125 | 57 | 52 |
| 10 | 42 | 228 | 42 | 35 | 103 | 165 | 355 | 655 | 311 | 116 | 57 | 50 |
| 11 | 42 | 148 | 50 | 35 | 103 | 205 | 480 | 550 | 300 | 116 | 57 | 45 |
| 12 | 42 | 130 | 50 | 50 | 103 | 165 | 515 | 515 | 300 | 108 | 57 | 42 |
| 13 | 39 | 116 | 50 | 50 | 125 | 165 | 480 | 480 | 300 | 103 | 57 | 42 |
| 14 | 36 | 103 | 54 | 50 | 130 | 130 | 415 | 467 | 275 | 103 | 57 | 42 |
| 15 | 36 | 103 | 74 | 50 | 165 | 130 | 355 | 550 | 250 | 103 | 57 | 40 |
| 16 | 36 | 98 | 78 | 60 | 165 | 130 | 328 | 690 | 250 | 103 | 57 | 41 |
| 17 | 36 | 98 | 78 | 70 | 165 | 130 | 311 | 655 | 250 | 103 | 57 | 41 |
| 18 | 36 | 90 | 68 | 134 | 148 | 148 | 355 | 905 | 214 | 103 | 57 | 40 |
| 19 | 39 | 103 | 57 | 130 | 130 | 165 | 311 | 730 | 205 | 103 | 57 | 40 |
| 20 | 39 | 83 | 57 | 103 | 130 | 165 | 344 | 706 | 205 | 103 | 57 | 40 |
| 21 | 36 | 78 | 57 | 78 | 103 | 137 | 403 | 815 | 205 | 103 | 57 | 40 |
| 22 | 45 | 78 | 57 | 78 | 103 | 130 | 467 | 815 | 205 | 103 | 57 | 40 |
| 23 | 54 | 78 | 57 | 78 | 103 | 130 | 480 | 815 | 205 | 103 | 57 | 40 |
| 24 | 45 | 78 | 57 | 78 | 103 | 130 | 515 | 815 | 205 | 103 | 54 | 40 |
| 25 | 50 | 78 | 57 | 78 | 103 | 130 | 620 | 690 | 205 | 103 | 52 | 40 |
| 26 | 57 | 78 | 57 | 78 | 103 | 130 | 730 | 770 | 205 | 103 | 52 | 40 |
| 27 | 57 | 78 | 57 | 78 | 78 | 103 | 585 | 655 | 205 | 103 | 65 | 40 |
| 28 | 57 | 78 | 57 | 78 | 78 | 103 | 585 | 585 | 173 | 103 | 61 | 40 |
| 29 | 57 | 78 | 57 | 78 | ..... | 125 | 515 | 550 | 165 | 103 | 57 | 40 |
| 30 | 45 | 78 | 74 | 78 | ..... | 185 | 415 | 550 | 165 | 93 | 52 | 40 |
| 31 | 42 | ..... | 74 | 78 | ..... | 250 | ..... | 620 | ..... | 80 | 52 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Daily discharge Jan. 5–17, 1913, estimated, because of ice, on basis of observer's notes and temperature and precipitation data.

*Monthly discharge of North Fork of North Fork of Yuba River at Downieville, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 71.2 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 57 | 36 | 43.4 | 0.609 | 0.70 | 2,670 | B. |
| November | 415 | 42 | 110 | 1.54 | 1.72 | 6,540 | A. |
| December | 78 | 42 | 57.9 | .813 | .94 | 3,560 | B. |
| January | 134 | 35 | 67.9 | .953 | 1.10 | 4,180 | B. |
| February | 165 | 78 | 110 | 1.54 | 1.60 | 6,110 | A. |
| March | 250 | 78 | 137 | 1.92 | 2.21 | 8,420 | A. |
| April | 730 | 250 | 410 | 5.76 | 6.43 | 24,400 | A. |
| May | 1,150 | 355 | 646 | 9.07 | 10.46 | 39,700 | A. |
| June | 730 | 165 | 308 | 4.32 | 4.82 | 18,300 | A. |
| July | 148 | 80 | 111 | 1.56 | 1.80 | 6,830 | A. |
| August | 78 | 52 | 60.4 | .848 | .98 | 3,710 | B. |
| September | 52 | 40 | 44.4 | .623 | .70 | 2,640 | B. |
| The year | 1,150 | 36 | 176 | 2.47 | 33.46 | 127,000 | |

### ROCK CREEK AT GOODYEAR BAR, CAL.

LOCATION.—In the W. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., in Tahoe National Forest, at the footbridge at Goodyear Bar, Woodruff Creek enters 350 feet above and Rock Creek joins the North Fork of the Yuba River 600 feet below the station.

RECORDS AVAILABLE.—October 30, 1910, to September 30, 1913.

DRAINAGE AREA.—10.8 square miles.

GAGE.—Vertical staff fastened to an alder tree on right bank 40 feet below bridge.

CHANNEL.—Bowlders and gravel; rough; shifts somewhat at high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Three small ditches, diverting about 10 second-feet, head above the station.

ACCURACY.—Results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

The following discharge measurement was made by H. J. Tompkins: August 18, 1913: Gage height, 2.15 feet; discharge, 13 second-feet.

*Daily gage height, in feet, of Rock Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.1 | 2.2 | 2.4 | 2.6 | 2.8 | 2.6 | 3.4 | 3.3 | 2.9 | 2.3 | 2.1 | 2.0 |
| 2 | 2.05 | 2.2 | 2.4 | 2.55 | 2.8 | 2.6 | 3.3 | 3.3 | 2.9 | 2.2 | 2.1 | 2.0 |
| 3 | 2.1 | 2.2 | 2.4 | 2.5 | 2.75 | 2.6 | 3.3 | 3.35 | 2.85 | 2.3 | 2.1 | 2.0 |
| 4 | 2.1 | 2.25 | 2.4 | 2.5 | 2.75 | 2.6 | 3.5 | 3.5 | 2.8 | 2.4 | 2.1 | 2.0 |
| 5 | 2.1 | 2.3 | 2.35 | 2.5 | 2.7 | 2.7 | 3.8 | 3.6 | 2.8 | 2.3 | 2.1 | 2.0 |
| 6 | 2.1 | 3.8 | 2.35 | 2.5 | 2.7 | 2.8 | 3.5 | 3.6 | 2.75 | 2.3 | 2.1 | 2.1 |
| 7 | 2.1 | 2.9 | 2.35 | 2.5 | 2.7 | 2.8 | 3.4 | 3.7 | 2.7 | 2.15 | 2.1 | 2.1 |
| 8 | 2.1 | 2.4 | 2.35 | 2.5 | 2.7 | 2.8 | 3.3 | 3.5 | 2.7 | 2.15 | 2.1 | 2.1 |
| 9 | 2.1 | 2.8 | 2.35 | 2.5 | 2.7 | 2.85 | 3.3 | 3.4 | 2.6 | 2.1 | 2.1 | 2.1 |
| 10 | 2.1 | 2.9 | 2.35 | 2.45 | 2.75 | 2.9 | 3.5 | 3.7 | 2.6 | ..... | 2.1 | 2.1 |
| 11 | 2.1 | 2.7 | 2.35 | 2.45 | 2.7 | 2.9 | 3.6 | 3.6 | 2.55 | ..... | 2.1 | 2.1 |
| 12 | 2.1 | 2.6 | 2.35 | 2.5 | 2.7 | 2.85 | 3.6 | 3.5 | 2.55 | 2.1 | ..... | 2.1 |
| 13 | 2.1 | 2.6 | 2.4 | 2.6 | 2.75 | 2.8 | 3.5 | 3.4 | 2.55 | 2.1 | 2.1 | 2.1 |
| 14 | 2.1 | 2.55 | 2.5 | 2.7 | 2.75 | 2.75 | 3.4 | 3.4 | 2.55 | 2.1 | 2.1 | 2.1 |
| 15 | ..... | 2.5 | 2.6 | 2.8 | 2.75 | 2.75 | 3.4 | 3.4 | 2.5 | 2.1 | 2.1 | 2.1 |
| 16 | ..... | 2.5 | 2.6 | 2.7 | 2.85 | 2.7 | 3.3 | 3.5 | 2.5 | 2.1 | 2.1 | 2.05 |
| 17 | 2.15 | 2.45 | 2.6 | 2.7 | 2.9 | 2.8 | 3.4 | 3.6 | 2.5 | 2.1 | 2.05 | 2.05 |
| 18 | 2.15 | 2.45 | 2.55 | 3.4 | 2.9 | 2.8 | 3.4 | 3.6 | 2.5 | 2.1 | 2.0 | 2.05 |
| 19 | 2.15 | 2.6 | 2.5 | 3.0 | 2.8 | 2.95 | 3.4 | 3.5 | 2.5 | 2.1 | 2.0 | 2.0 |
| 20 | 2.15 | 2.4 | 2.5 | 2.8 | 2.8 | 2.9 | 3.5 | 3.5 | 2.5 | 2.1 | 2.0 | 2.0 |
| 21 | 2.15 | 2.45 | 2.5 | 2.7 | 2.7 | 2.9 | 3.5 | 3.5 | 2.5 | 2.1 | 2.0 | 2.0 |
| 22 | 2.25 | 2.45 | 2.45 | 2.6 | 2.7 | 2.9 | 3.55 | 3.4 | 2.5 | 2.1 | ..... | 2.0 |
| 23 | 2.2 | 2.4 | 2.45 | 2.6 | 2.7 | 2.8 | 3.55 | 3.3 | ..... | 2.3 | 2.05 | 2.05 |
| 24 | 2.1 | 2.4 | 2.45 | 2.6 | 2.65 | 2.8 | 3.6 | 3.3 | 2.45 | 2.2 | 2.0 | 2.05 |
| 25 | 2.35 | 2.4 | 2.45 | 2.6 | 2.65 | 2.8 | 3.8 | 3.2 | 2.45 | 2.2 | 2.0 | 2.0 |
| 26 | 2.3 | 2.4 | 2.4 | 2.6 | 2.65 | 2.8 | 3.9 | 3.1 | 2.5 | 2.2 | 2.0 | 2.0 |
| 27 | 2.3 | 2.4 | 2.4 | 2.7 | 2.6 | 2.8 | 3.7 | 3.1 | 2.5 | 2.2 | 2.0 | 2.0 |
| 28 | 2.3 | 2.4 | 2.4 | 2.7 | 2.6 | 2.9 | 3.6 | 3.1 | 2.45 | 2.2 | 2.05 | 2.1 |
| 29 | 2.3 | 2.4 | 2.4 | 2.7 | ..... | 2.9 | 3.5 | 3.0 | 2.45 | 2.2 | 2.05 | 2.1 |
| 30 | 2.2 | 2.4 | 2.5 | 2.7 | ..... | 3.15 | 3.4 | 3.0 | 2.4 | 2.1 | 2.0 | 2.1 |
| 31 | 2.2 | ..... | 2.5 | 2.75 | ..... | 3.3 | ..... | 2.9 | ..... | 2.1 | 2.0 | ..... |

*Daily discharge, in second-feet, of Rock Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 1.7 | 3.5 | 7 | 14 | 7 | 62 | 52 | 19 | 2.5 | 1.0 | 0.5 |
| 2 | .8 | 1.7 | 3.5 | 6 | 14 | 7 | 52 | 52 | 19 | 1.7 | 1.0 | .5 |
| 3 | 1.0 | 1.7 | 3.5 | 5 | 12 | 7 | 52 | 57 | 16 | 2.5 | 1.0 | .5 |
| 4 | 1.0 | 2.1 | 3.5 | 5 | 12 | 7 | 72 | 72 | 14 | 3.5 | 1.0 | .5 |
| 5 | 1.0 | 2.5 | 3.0 | 5 | 10 | 10 | 108 | 83 | 14 | 2.5 | 1.0 | .5 |
| 6 | 1.0 | 108 | 3.0 | 5 | 10 | 14 | 72 | 83 | 12 | 2.5 | 1.0 | 1.0 |
| 7 | 1.0 | 19 | 3.0 | 5 | 10 | 14 | 62 | 95 | 10 | 1.4 | 1.0 | 1.0 |
| 8 | 1.0 | 3.5 | 3.0 | 5 | 10 | 14 | 52 | 72 | 10 | 1.4 | 1.0 | 1.0 |
| 9 | 1.0 | 14 | 3.0 | 5 | 10 | 16 | 52 | 62 | 7 | 1.0 | 1.0 | 1.0 |
| 10 | 1.0 | 19 | 3.0 | 4.2 | 12 | 19 | 72 | 95 | 7 | 1.0 | 1.0 | 1.0 |
| 11 | 1.0 | 10 | 3.0 | 4.2 | 10 | 19 | 83 | 83 | 6 | 1.0 | 1.0 | 1.0 |
| 12 | 1.0 | 7 | 3.0 | 5 | 10 | 16 | 83 | 72 | 6 | 1.0 | 1.0 | 1.0 |
| 13 | 1.0 | 7 | 3.5 | 7 | 12 | 14 | 72 | 62 | 6 | 1.0 | 1.0 | 1.0 |
| 14 | 1.0 | 6 | 5 | 10 | 12 | 12 | 62 | 62 | 6 | 1.0 | 1.0 | 1.0 |
| 15 | 1.1 | 5 | 7 | 14 | 12 | 12 | 62 | 62 | 5 | 1.0 | 1.0 | 1.0 |
| 16 | 1.3 | 5 | 7 | 10 | 16 | 10 | 52 | 72 | 5 | 1.0 | 1.0 | .8 |
| 17 | 1.4 | 4.2 | 7 | 10 | 19 | 14 | 62 | 83 | 5 | 1.0 | .8 | .8 |
| 18 | 1.4 | 4.2 | 6 | 62 | 19 | 14 | 62 | 83 | 5 | 1.0 | .5 | .8 |
| 19 | 1.4 | 7 | 5 | 26 | 14 | 22 | 62 | 72 | 5 | 1.0 | .5 | .5 |
| 20 | 1.4 | 3.5 | 5 | 14 | 14 | 19 | 72 | 72 | 5 | 1.0 | .5 | .5 |
| 21 | 1.4 | 4.2 | 5 | 10 | 10 | 19 | 72 | 72 | 5 | 1.0 | .5 | .5 |
| 22 | 2.1 | 4.2 | 4.2 | 7 | 10 | 19 | 78 | 62 | 5 | 1.0 | .6 | .5 |
| 23 | 1.7 | 3.5 | 4.2 | 7 | 10 | 14 | 78 | 52 | 4.6 | 2.5 | .8 | .8 |
| 24 | 1.0 | 3.5 | 4.2 | 7 | 8 | 14 | 83 | 52 | 4.2 | 1.7 | .5 | .8 |
| 25 | 3.0 | 3.5 | 4.2 | 7 | 8 | 14 | 83 | 43 | 4.2 | 1.7 | .5 | .5 |
| 26 | 2.5 | 3.5 | 3.5 | 7 | 8 | 14 | 122 | 34 | 5 | 1.7 | .5 | .5 |
| 27 | 2.5 | 3.5 | 3.5 | 10 | 7 | 14 | 95 | 34 | 5 | 1.7 | .5 | .5 |
| 28 | 2.5 | 3.5 | 3.5 | 10 | 7 | 19 | 83 | 34 | 4.2 | 1.7 | .8 | 1.0 |
| 29 | 2.5 | 3.5 | 3.5 | 10 | ..... | 19 | 72 | 26 | 4.2 | 1.7 | .8 | 1.0 |
| 30 | 1.7 | 3.5 | 5 | 10 | ..... | 38 | 62 | 26 | 3.5 | 1.0 | .5 | 1.0 |
| 31 | 1.7 | ..... | 5 | 12 | ..... | 52 | ..... | 19 | ..... | 1.0 | .5 | ..... |

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge interpolated for days on which gage was not read.

*Monthly discharge of Rock Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 3.0 | 0.8 | 1.43 | 87.9 | D. |
| November | 108 | 1.7 | 8.95 | 533 | D. |
| December | 7 | 3.0 | 4.17 | 256 | D. |
| January | 62 | 4.2 | 10.0 | 615 | D. |
| February | 19 | 7 | 11.4 | 633 | D. |
| March | 52 | 7 | 16.2 | 996 | D. |
| April | 122 | 52 | 71.9 | 4,280 | B. |
| May | 95 | 19 | 61.3 | 3,770 | B. |
| June | 19 | 3.5 | 7.56 | 450 | D. |
| July | 3.5 | 1.0 | 1.51 | 92.8 | D. |
| August | 1.0 | .5 | .80 | 49.2 | D. |
| September | 1.0 | .5 | .77 | 45.8 | D. |
| The year | 122 | .5 | 16.3 | 11,800 | |

### GOODYEAR CREEK AT GOODYEAR BAR, CAL.

LOCATION.—In the W. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., at trail bridge, in Tahoe National Forest, 300 feet above junction with North Fork of Yuba River, and half a mile north of Goodyear Bar.

RECORDS AVAILABLE.—October 30, 1910, to September 30, 1913.

DRAINAGE AREA.—12.2 square miles.

GAGE.—Vertical staff fastened to an alder tree on left bank 200 feet above bridge.

CHANNEL.—Solid rock and gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Three small irrigation ditches, having a total capacity of about 7½ second-feet, head above the station.

ACCURACY. Rating curve well defined at low and medium stages; results, except for high water, good.

COOPERATION.—Station maintained in cooperation with United States Forest Service. The following discharge measurement was made by H. J. Tompkins:

Aug. 18, 1913: Gage height, 1.53 feet; discharge, 5.7 second-feet.

*Daily gage height, in feet, of Goodyear Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 1.5 | 1.55 | 1.7 | 2.0 | 1.8 | 2.6 | 2.45 | 2.15 | 1.65 | 1.5 | 1.45 |
| 2 | 1.5 | 1.5 | 1.55 | 1.7 | 2.05 | 1.8 | 2.5 | 2.5 | 2.15 | 1.65 | 1.5 | 1.45 |
| 3 | 1.5 | 1.5 | 1.55 | 1.7 | 2.0 | 1.8 | 2.4 | 2.6 | 2.1 | 1.65 | 1.5 | 1.45 |
| 4 | 1.5 | 1.5 | 1.55 | 1.7 | 1.95 | 1.8 | 2.7 | 2.75 | 2.1 | 1.65 | 1.5 | 1.45 |
| 5 | 1.5 | 1.4 | 1.55 | 1.65 | 1.95 | 1.9 | 3.1 | 2.9 | 2.1 | 1.65 | 1.5 | 1.45 |
| 6 | 1.5 | 3.2 | 1.5 | 1.7 | 1.95 | 2.0 | 2.6 | 2.95 | 2.1 | 1.65 | 1.5 | 1.45 |
| 7 | 1.5 | 2.05 | 1.5 | 1.7 | 1.95 | 2.0 | 2.5 | 3.0 | 2.0 | 1.6 | 1.5 | 1.4 |
| 8 | 1.5 | 1.75 | 1.5 | 1.65 | 1.95 | 2.0 | 2.5 | 2.9 | 1.9 | 1.6 | 1.5 | 1.45 |
| 9 | 1.5 | 2.0 | 1.5 | 1.6 | 1.95 | 2.0 | 2.5 | 2.9 | 1.9 | 1.55 | 1.5 | 1.45 |
| 10 | 1.5 | 2.1 | 1.5 | 1.6 | 2.0 | 2.1 | 2.8 | 2.8 | 1.9 | ..... | 1.5 | 1.5 |
| 11 | 1.45 | 1.9 | 1.5 | 1.6 | 1.8 | 2.1 | 3.0 | 2.7 | 1.8 | ..... | 1.5 | 1.5 |
| 12 | 1.45 | 1.8 | 1.5 | 1.65 | 2.2 | 2.1 | 3.0 | 2.6 | 1.75 | 1.5 | ..... | 1.5 |
| 13 | 1.45 | 1.75 | 1.6 | 1.7 | 2.25 | 2.05 | 2.8 | 2.5 | 1.75 | 1.5 | 1.5 | 1.5 |
| 14 | 1.45 | 1.75 | 1.65 | 1.85 | 2.25 | 2.0 | 2.6 | 2.55 | 1.7 | 1.5 | 1.5 | 1.5 |
| 15 | 1.4 | 1.7 | 1.8 | 1.8 | 2.15 | 2.0 | 2.6 | 2.5 | 1.7 | 1.5 | 1.5 | 1.5 |
| 16 | ..... | 1.7 | 1.7 | 1.75 | 2.15 | 2.0 | 2.5 | 2.6 | 1.7 | 1.5 | 1.5 | 1.5 |
| 17 | 1.4 | 1.65 | 1.7 | 1.7 | 2.15 | 2.1 | 2.6 | 2.6 | 1.7 | 1.5 | 1.5 | 1.5 |
| 18 | 1.45 | 1.65 | 1.7 | 2.3 | 2.2 | 2.1 | 2.6 | 2.6 | 1.7 | 1.5 | 1.5 | 1.5 |
| 19 | 1.5 | 1.8 | 1.65 | 2.0 | 2.05 | 2.15 | 2.6 | 2.6 | 1.7 | 1.5 | 1.5 | 1.5 |
| 20 | 1.5 | 1.6 | 1.6 | 1.9 | 2.0 | 2.05 | 2.7 | 2.6 | 1.7 | 1.5 | 1.5 | 1.5 |
| 21 | 1.5 | 1.6 | 1.6 | 1.8 | 2.0 | 2.1 | 2.8 | 2.5 | 1.7 | 1.5 | 1.5 | 1.4 |
| 22 | 1.55 | 1.6 | 1.6 | 1.7 | 1.95 | 2.05 | 2.9 | 2.5 | 1.7 | 1.5 | ..... | 1.4 |
| 23 | 1.55 | 1.6 | 1.6 | 1.7 | 1.9 | 2.0 | 2.9 | 2.45 | ..... | 1.6 | 1.5 | 1.4 |
| 24 | 1.5 | 1.6 | 1.6 | 1.75 | 1.9 | 2.0 | 3.0 | 2.35 | 1.7 | 1.6 | 1.5 | 1.4 |
| 25 | 1.6 | 1.6 | 1.6 | 1.8 | 1.9 | 2.0 | 3.1 | 2.3 | 1.7 | 1.55 | 1.5 | 1.4 |
| 26 | 1.55 | 1.6 | 1.55 | 1.85 | 1.9 | 2.0 | 3.2 | 2.25 | 1.7 | 1.55 | 1.5 | 1.4 |
| 27 | 1.55 | 1.55 | 1.55 | 1.9 | 1.85 | 2.0 | 2.9 | 2.25 | 1.7 | 1.6 | 1.5 | 1.4 |
| 28 | 1.5 | 1.55 | 1.55 | 1.9 | 1.8 | 2.0 | 2.8 | 2.25 | 1.7 | 1.6 | 1.5 | 1.45 |
| 29 | 1.5 | 1.55 | 1.55 | 1.9 | ..... | 2.05 | 2.6 | 2.2 | 1.7 | 1.6 | 1.5 | 1.45 |
| 30 | 1.5 | 1.55 | 1.65 | 1.9 | ..... | 2.2 | 2.5 | 2.1 | 1.65 | 1.5 | 1.5 | 1.45 |
| 31 | 1.5 | ..... | 1.75 | 1.95 | ..... | 2.6 | ..... | 2.1 | ..... | 1.5 | 1.5 | ..... |

*Daily discharge, in second-feet, of Goodyear Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 5 | 6 | 12 | 32 | 17 | 93 | 76 | 44 | 10 | 5 | 4 |
| 2 | 5 | 5 | 6 | 12 | 36 | 17 | 81 | 81 | 44 | 10 | 5 | 4 |
| 3 | 5 | 5 | 6 | 12 | 32 | 17 | 70 | 93 | 40 | 10 | 5 | 4 |
| 4 | 5 | 5 | 6 | 12 | 28 | 17 | 105 | 112 | 40 | 10 | 5 | 4 |
| 5 | 5 | 3 | 6 | 10 | 28 | 24 | 159 | 131 | 40 | 10 | 5 | 4 |
| 6 | 5 | 174 | 5 | 12 | 28 | 32 | 93 | 138 | 40 | 10 | 5 | 4 |
| 7 | 5 | 36 | 5 | 12 | 28 | 32 | 81 | 145 | 32 | 8 | 5 | 3 |
| 8 | 5 | 14 | 5 | 10 | 28 | 32 | 81 | 131 | 24 | 8 | 5 | 4 |
| 9 | 5 | 32 | 5 | 8 | 28 | 32 | 81 | 131 | 24 | 6 | 5 | 4 |
| 10 | 5 | 40 | 5 | 8 | 32 | 40 | 118 | 118 | 24 | 6 | 5 | 5 |
| 11 | 4 | 24 | 5 | 8 | 17 | 40 | 145 | 105 | 17 | 5 | 5 | 5 |
| 12 | 4 | 17 | 5 | 10 | 49 | 40 | 145 | 93 | 14 | 5 | 5 | 5 |
| 13 | 4 | 14 | 8 | 12 | 54 | 36 | 118 | 81 | 14 | 5 | 5 | 5 |
| 14 | 4 | 14 | 10 | 20 | 54 | 32 | 93 | 87 | 14 | 5 | 5 | 5 |
| 15 | 3 | 12 | 17 | 17 | 44 | 32 | 93 | 81 | 12 | 5 | 5 | 5 |
| 16 | 3 | 12 | 12 | 14 | 44 | 32 | 81 | 93 | 12 | 5 | 5 | 5 |
| 17 | 3 | 10 | 12 | 12 | 44 | 40 | 93 | 93 | 12 | 5 | 5 | 5 |
| 18 | 4 | 10 | 12 | 59 | 49 | 40 | 93 | 93 | 12 | 5 | 5 | 5 |
| 19 | 5 | 17 | 10 | 32 | 36 | 44 | 93 | 93 | 12 | 5 | 5 | 5 |
| 20 | 5 | 8 | 8 | 24 | 32 | 36 | 105 | 93 | 12 | 5 | 5 | 5 |
| 21 | 5 | 8 | 8 | 17 | 32 | 40 | 118 | 81 | 12 | 5 | 5 | 3 |
| 22 | 6 | 8 | 8 | 12 | 28 | 36 | 131 | 81 | 12 | 5 | 5 | 3 |
| 23 | 6 | 8 | 8 | 12 | 24 | 32 | 131 | 76 | 12 | 8 | 5 | 3 |
| 24 | 5 | 8 | 8 | 14 | 24 | 32 | 145 | 64 | 12 | 8 | 5 | 3 |
| 25 | 8 | 8 | 8 | 17 | 24 | 32 | 159 | 59 | 12 | 6 | 5 | 3 |
| 26 | 6 | 8 | 6 | 20 | 24 | 32 | 174 | 54 | 12 | 6 | 5 | 3 |
| 27 | 6 | 6 | 6 | 24 | 20 | 32 | 131 | 54 | 12 | 8 | 5 | 3 |
| 28 | 5 | 6 | 6 | 24 | 17 | 32 | 118 | 54 | 12 | 8 | 5 | 4 |
| 29 | 5 | 6 | 6 | 24 | ..... | 36 | 93 | 49 | 12 | 8 | 5 | 4 |
| 30 | 5 | 6 | 10 | 24 | ..... | 49 | 81 | 40 | 10 | 5 | 5 | 4 |
| 31 | 5 | ..... | 14 | 28 | ..... | 93 | ..... | 40 | ..... | 5 | 5 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days on which gage was not read.

*Monthly discharge of Goodyear Creek at Goodyear Bar, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 8 | 3 | 4.9 | 301 | C. |
| November | 174 | 3 | 17.6 | 1,050 | C. |
| December | 17 | 5 | 7.8 | 480 | C. |
| January | 59 | 8 | 17.2 | 1,060 | B. |
| February | 54 | 17 | 32.7 | 1,820 | B. |
| March | 93 | 17 | 34.8 | 2,140 | B. |
| April | 174 | 70 | 110 | 6,540 | A. |
| May | 145 | 40 | 87.7 | 5,390 | A. |
| June | 44 | 10 | 20.0 | 1,190 | B. |
| July | 10 | 5 | 6.8 | 418 | C. |
| August | 5 | 5 | 5.0 | 307 | C. |
| September | 5 | 3 | 4.1 | 244 | C. |
| The year | 174 | 3 | 28.9 | 20,900 | |

### OREGON CREEK NEAR NORTH SAN JUAN, CAL.

LOCATION.—In the N. ½ SE. ¼ sec. 28, T. 18 N., R. 8 E., in Tahoe National Forest, below highway bridge, 500 feet above junction with Middle Fork of Yuba River, half a mile above Freemans Bridge, and 2 miles northeast of North San Juan.

RECORDS AVAILABLE.—October 28, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on right bank 150 feet below bridge.

CHANNEL.—Small bowlders and gravel; shifts at high stages.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet below gage or by wading.

ACCURACY.—Rating curves fairly well defined at low and medium stages; results fair.

*Discharge measurements of Oregon Creek near North San Juan, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 20 | Lasley Lee | 4.82 | 94 | Apr. 5 | E. C. Murphy | 5.58 | 426 |
| Mar. 20 | do | 4.85 | 94 | May 7 | Lasley Lee | 4.99 | 140 |
| Apr. 4 | E. C. Murphy | 5.35 | 291 | | | | |

*Daily gage height, in feet, of Oregon Creek near North San Juan, Cal., for the year ending Sept. 30, 1913.*

[Henry Zurhorst, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.8 | 3.9 | 4.0 | 4.5 | 4.7 | 4.4 | 5.18 | 4.95 | 4.30 | 4.02 | 3.88 | 3.78 |
| 2 | 3.8 | 3.9 | 4.0 | 4.4 | 4.8 | 4.4 | 5.20 | 4.90 | 4.40 | 4.02 | 3.88 | 3.78 |
| 3 | 3.8 | 3.9 | 4.0 | 4.3 | 4.7 | 4.4 | 5.08 | 4.88 | 4.32 | 4.05 | 3.82 | 3.78 |
| 4 | 3.8 | 4.0 | 4.0 | 4.3 | 4.7 | 4.4 | 5.38 | 4.88 | 4.30 | 4.05 | 3.82 | 3.80 |
| 5 | 3.8 | 4.0 | 4.0 | 4.2 | 4.6 | 4.5 | 5.60 | 4.90 | 4.30 | 4.05 | 3.80 | 3.78 |
| 6 | 3.8 | 6.0 | 4.0 | 4.4 | 4.6 | 4.7 | 5.40 | 4.98 | 4.28 | 4.00 | 3.80 | 3.78 |
| 7 | 3.8 | 4.8 | 4.0 | 4.3 | 4.6 | 4.7 | 5.28 | 4.95 | 4.28 | 4.00 | 3.80 | 3.78 |
| 8 | 3.8 | 4.4 | 4.0 | 4.3 | 4.6 | 4.7 | 5.20 | 4.90 | 4.25 | 3.95 | 3.80 | 3.75 |
| 9 | 3.8 | 4.2 | 4.0 | 4.3 | 4.6 | 4.8 | 5.18 | 5.25 | 4.20 | 3.90 | 3.80 | 3.75 |
| 10 | 3.8 | 4.9 | 4.0 | 4.2 | 4.6 | 4.8 | 5.18 | 5.10 | 4.20 | 3.90 | 3.80 | 3.75 |
| 11 | 3.8 | 4.6 | 4.0 | 4.3 | 4.6 | 4.8 | 5.20 | 5.00 | 4.20 | 3.90 | 3.80 | 3.75 |
| 12 | 3.8 | 4.4 | 4.0 | 4.4 | 4.7 | 4.8 | 5.25 | 4.92 | 4.20 | 3.90 | 3.80 | 3.72 |
| 13 | 3.8 | 4.3 | 4.0 | 4.6 | 4.7 | 4.7 | 5.40 | 4.88 | 4.20 | 3.90 | 3.80 | 3.70 |
| 14 | 3.8 | 4.2 | 4.0 | 4.9 | 4.7 | 4.7 | 5.30 | 4.80 | 4.22 | 3.90 | 3.82 | 3.70 |
| 15 | 3.8 | 4.2 | 4.3 | 4.9 | 4.7 | 4.7 | 5.20 | 4.80 | 4.15 | 3.90 | 3.82 | 3.70 |
| 16 | 3.8 | 4.1 | 4.8 | 4.8 | 4.8 | 4.6 | 5.18 | 4.78 | 4.00 | 3.90 | 3.82 | 3.70 |
| 17 | 3.8 | 4.1 | 4.4 | 4.6 | 4.8 | 4.6 | 5.12 | 4.75 | 4.10 | 3.90 | 3.82 | 3.70 |
| 18 | 3.8 | 4.1 | 4.3 | 5.5 | 4.8 | 4.7 | 5.20 | 4.80 | 4.10 | 3.90 | 3.82 | 3.70 |
| 19 | 3.8 | 4.0 | 4.2 | 5.1 | 4.7 | 4.9 | 5.15 | 4.80 | 4.10 | 3.90 | 3.82 | 3.70 |
| 20 | 3.8 | 4.2 | 4.2 | 4.8 | 4.7 | 4.85 | 5.12 | 4.75 | 4.10 | 3.90 | 3.80 | 3.70 |
| 21 | 3.8 | 4.2 | 4.2 | 4.7 | 4.7 | 4.78 | 5.12 | 4.70 | 4.10 | 3.90 | 3.72 | 3.75 |
| 22 | 3.8 | 4.1 | 4.1 | 4.6 | 4.6 | 4.88 | 5.15 | 4.62 | 4.08 | 3.90 | 3.72 | 3.75 |
| 23 | 4.2 | 4.1 | 4.1 | 4.5 | 4.5 | 4.78 | 5.15 | 4.60 | 4.10 | 3.95 | 3.72 | 3.72 |
| 24 | 4.0 | 4.1 | 4.1 | 4.4 | 4.5 | 4.70 | 5.15 | 4.52 | 4.08 | 3.95 | 3.72 | 3.72 |
| 25 | 4.0 | 4.1 | 4.1 | 4.5 | 4.5 | 4.70 | 5.18 | 4.48 | 4.08 | 3.95 | 3.72 | 3.72 |
| 26 | 4.0 | 4.1 | 4.1 | 4.5 | 4.5 | 4.62 | 5.20 | 4.48 | 4.08 | 3.95 | 3.72 | 3.75 |
| 27 | 4.0 | 4.1 | 4.1 | 4.5 | 4.4 | 4.65 | 5.22 | 4.40 | 4.18 | 3.92 | 3.72 | 3.75 |
| 28 | 4.0 | 4.0 | 4.1 | 4.6 | 4.4 | 4.70 | 5.18 | 4.52 | 4.08 | 3.92 | 3.72 | 3.75 |
| 29 | 4.0 | 4.0 | 4.1 | 4.6 | ..... | 4.70 | 5.10 | 4.42 | 4.05 | 3.90 | 3.72 | 3.80 |
| 30 | 4.0 | 4.0 | 4.2 | 4.6 | ..... | 4.92 | 5.02 | 4.40 | 4.05 | 3.90 | 3.72 | 3.75 |
| 31 | 4.0 | ..... | 4.3 | 4.7 | ..... | 5.10 | ..... | 4.35 | ..... | 3.88 | 3.72 | ..... |

*Daily discharge, in second-feet, of Oregon Creek near North San Juan, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | | | |
| 1 | | | | | 800 | | | | | | | 3 |
| 2 | | | | | 550 | 68 | | | | | 5 | 3 |
| 3 | | | | | 420 | | 2,680 | | | | | 3 |
| 4 | | | | | 420 | 194 | | | | | | 3 |
| 5 | | 4 | 16 | | 365 | 365 | | | | | | 3 |
| 6 | | | 7.7 | | | 630 | | 250 | | | | 3 |
| 7 | | | | | 315 | 890 | | | 110 | 16 | | 3 |
| 8 | | | | | | 630 | | | | | | 3 |
| 9 | | | | | 162 | 480 | | | | | | 3 |
| 10 | | | | | | 420 | | | | | | 3 |
| 11 | | 230 | 137 | | 162 | 420 | | | | | | 3 |
| 12 | | | | | 134 | | | | | | | 3 |
| 13 | | | | | 162 | | | 230 | 52 | | | 3 |
| 14 | | | | | | | | | | 8 | | 3 |
| 15 | | | | | 110 | 315 | | | | | | 3 |
| 16 | | | | | | 270 | | | | | | 3 |
| 17 | | | | | | 270 | 365 | | 38 | | | 3 |
| 18 | | | | | 88 | 194 | | | | | | 3 |
| 19 | | | 230 | 38 | 88 | | | 845 | | | | 3 |
| 20 | | 5 | | 1,460 | | | | | | | | 3 |
| 21 | | | | 420 | 68 | | | | | | 5 | 3 |
| 22 | | | | 194 | 68 | | | | | | 5 | 3 |
| 23 | | | | 110 | | | | | | | 5 | 3 |
| 24 | | | | 1,220 | | | | 630 | | 5 | 5 | 3 |
| 25 | | | | 990 | | | 292 | 630 | | | 5 | 3 |
| 26 | | | | 420 | | | | | 26 | | 5 | 5 |
| 27 | | | | 270 | 52 | | | | | | 5 | 5 |
| 28 | 4.9 | | | 315 | | | | | | | 5 | 5 |
| 29 | | | | 890 | | | | | 26 | | 5 | 5 |
| 30 | | | | 1,790 | | | | | | | | 5 |
| 31 | | | 16 | 1,660 | | 420 | | | | | 3 | |
| 1911–12. | | | | | | | | | | | | |
| 1 | 5 | 5 | 8 | 8 | 52 | 26 | 55 | 375 | 55 | 13 | 3 | 2 |
| 2 | 5 | 5 | 8 | 8 | 38 | 26 | 55 | 270 | 43 | 13 | 3 | 2 |
| 3 | 5 | 5 | 8 | 8 | 38 | 26 | 43 | 220 | 33 | 8 | 3 | 3 |
| 4 | 5 | 5 | 8 | 8 | 38 | 26 | 43 | 177 | 33 | 8 | 3 | 5 |
| 5 | 8 | 5 | 5 | 16 | 26 | 134 | 43 | 177 | 33 | 8 | 3 | 3 |
| 6 | 8 | 5 | 5 | 8 | 26 | 630 | 43 | 141 | 25 | 8 | 3 | 3 |
| 7 | 5 | 5 | 8 | 8 | 26 | 177 | 43 | 112 | 25 | 8 | 3 | 19 |
| 8 | 5 | 5 | 5 | 16 | 38 | 112 | 43 | 112 | 25 | 8 | 3 | 8 |
| 9 | 5 | 16 | 5 | 52 | 38 | 88 | 43 | 112 | 25 | 8 | 3 | 5 |
| 10 | 8 | 110 | 5 | 88 | 38 | 70 | 70 | 88 | 25 | 8 | 3 | 5 |
| 11 | 5 | 26 | 5 | 88 | 38 | 55 | 55 | 88 | 19 | 8 | 3 | 5 |
| 12 | 5 | 16 | 5 | 68 | 26 | 55 | 43 | 88 | 19 | 5 | 3 | 3 |
| 13 | 5 | 8 | 5 | 52 | 38 | 70 | 43 | 70 | 33 | 5 | 3 | 3 |
| 14 | 5 | 16 | 5 | 52 | 38 | 55 | 43 | 70 | 25 | 5 | 3 | 3 |
| 15 | 5 | 16 | 5 | 38 | 38 | 55 | 43 | 70 | 19 | 5 | 3 | 3 |
| 16 | 5 | 38 | 5 | 134 | 26 | 70 | 55 | 55 | 19 | 5 | 3 | 3 |
| 17 | 5 | 8 | 8 | 68 | 26 | 55 | 55 | 55 | 19 | 5 | 2 | 3 |
| 18 | 5 | 16 | 8 | 52 | 88 | 55 | 55 | 43 | 19 | 5 | 2 | 3 |
| 19 | 5 | 16 | 8 | 162 | 68 | 70 | 55 | 43 | 19 | 5 | 2 | 3 |
| 20 | 5 | 8 | 8 | 88 | 52 | 88 | 43 | 88 | 13 | 5 | 2 | 3 |
| 21 | 5 | 8 | 8 | 88 | 38 | 70 | 43 | 70 | 13 | 3 | 2 | 3 |
| 22 | 5 | 8 | 8 | 52 | 38 | 55 | 43 | 70 | 13 | 3 | 2 | 3 |
| 23 | 5 | 8 | 8 | 38 | 38 | 55 | 43 | 70 | 19 | 3 | 2 | 3 |
| 24 | 5 | 8 | 8 | 38 | 26 | 55 | 55 | 55 | 13 | 3 | 2 | 3 |
| 25 | 5 | 8 | 5 | 52 | 26 | 55 | 70 | 70 | 13 | 3 | 2 | 3 |
| 26 | 5 | 8 | 5 | 365 | 26 | 55 | 88 | 112 | 13 | 3 | 2 | 3 |
| 27 | 8 | 5 | 5 | 162 | 26 | 55 | 88 | 112 | 13 | 3 | 2 | 3 |
| 28 | 5 | 5 | 8 | 110 | 26 | 55 | 70 | 88 | 13 | 3 | 2 | 3 |
| 29 | 5 | 5 | 8 | 68 | 26 | 70 | 177 | 88 | 13 | 3 | 2 | 3 |
| 30 | 5 | 8 | 8 | 52 | | 70 | 270 | 70 | 13 | 3 | 2 | 3 |
| 31 | 5 | | 8 | 52 | | 70 | | 55 | | 3 | 2 | |

*Daily discharge, in second-feet, of Oregon Creek near North San Juan, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 3 | 5 | 8 | 43 | 70 | 33 | 211 | 126 | 25 | 9 | 4.5 | 3 |
| 2 | 3 | 5 | 8 | 33 | 88 | 33 | 220 | 112 | 33 | 9 | 4.5 | 3 |
| 3 | 3 | 5 | 8 | 25 | 70 | 33 | 170 | 107 | 27 | 10 | 3.5 | 3 |
| 4 | 3 | 8 | 8 | 25 | 70 | 33 | 310 | 107 | 25 | 10 | 3.5 | 3 |
| 5 | 3 | 8 | 8 | 19 | 55 | 43 | 435 | 112 | 25 | 10 | 3 | 3 |
| 6 | 3 | 745 | 8 | 33 | 55 | 70 | 320 | 135 | 24 | 8 | 3 | 3 |
| 7 | 3 | 88 | 8 | 25 | 55 | 70 | 260 | 126 | 24 | 8 | 3 | 3 |
| 8 | 3 | 33 | 8 | 25 | 55 | 70 | 220 | 112 | 22 | 6.5 | 3 | 2.5 |
| 9 | 3 | 19 | 8 | 25 | 55 | 88 | 211 | 245 | 19 | 5 | 3 | 2.5 |
| 10 | 3 | 112 | 8 | 19 | 55 | 88 | 211 | 177 | 19 | 5 | 3 | 2.5 |
| 11 | 3 | 55 | 8 | 25 | 55 | 88 | 220 | 141 | 19 | 5 | 3 | 2.5 |
| 12 | 3 | 33 | 8 | 33 | 70 | 88 | 245 | 118 | 19 | 5 | 3 | 2 |
| 13 | 3 | 25 | 8 | 55 | 70 | 70 | 320 | 107 | 19 | 5 | 3 | 2 |
| 14 | 3 | 19 | 8 | 112 | 70 | 70 | 270 | 88 | 20 | 5 | 3.5 | 2 |
| 15 | 3 | 19 | 25 | 112 | 70 | 70 | 220 | 88 | 16 | 5 | 3.5 | 2 |
| 16 | 3 | 13 | 88 | 88 | 88 | 55 | 211 | 84 | 8 | 5 | 3.5 | 2 |
| 17 | 3 | 13 | 33 | 55 | 88 | 55 | 186 | 79 | 13 | 5 | 3.5 | 2 |
| 18 | 3 | 13 | 25 | 375 | 88 | 70 | 220 | 88 | 13 | 5 | 3.5 | 2 |
| 19 | 3 | 8 | 19 | 177 | 70 | 112 | 198 | 88 | 13 | 5 | 3.5 | 2 |
| 20 | 3 | 19 | 19 | 88 | 70 | 100 | 186 | 79 | 13 | 5 | 3 | 2 |
| 21 | 3 | 19 | 19 | 70 | 70 | 84 | 186 | 70 | 13 | 5 | 2 | 2.5 |
| 22 | 3 | 13 | 13 | 55 | 55 | 107 | 198 | 58 | 12 | 5 | 2 | 2.5 |
| 23 | 19 | 13 | 13 | 43 | 43 | 84 | 198 | 55 | 13 | 6.5 | 2 | 2 |
| 24 | 8 | 13 | 13 | 33 | 43 | 70 | 198 | 45 | 12 | 6.5 | 2 | 2 |
| 25 | 8 | 13 | 13 | 43 | 43 | 70 | 211 | 41 | 12 | 6.5 | 2 | 2 |
| 26 | 8 | 13 | 13 | 43 | 43 | 58 | 220 | 41 | 12 | 6.5 | 2 | 2.5 |
| 27 | 8 | 13 | 13 | 43 | 33 | 62 | 230 | 33 | 18 | 5.5 | 2 | 2.5 |
| 28 | 8 | 8 | 13 | 55 | 33 | 70 | 211 | 45 | 12 | 5.5 | 2 | 2.5 |
| 29 | 8 | 8 | 13 | 55 | ..... | 70 | 177 | 35 | 10 | 5 | 2 | 3 |
| 30 | 8 | 8 | 19 | 55 | ..... | 118 | 148 | 33 | 10 | 5 | 2 | 2.5 |
| 31 | 8 | ..... | 25 | 70 | ..... | 177 | ..... | 29 | ..... | 4.5 | 2 | ..... |

NOTE.—Discharge determined from three fairly well-defined rating curves applicable as follows: Oct. 28 to Nov. 8, 1910; Nov. 9, 1910, to Mar. 6, 1912; Mar. 7, 1912, to Sept. 30, 1913. Discharge Sept. 1, 1911, interpolated.

*Monthly discharge of Oregon Creek near North San Juan, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September | 5 | 3 | 3.3 | 196 | D. |
| 1911–12. | | | | | |
| October | 8 | 5 | 5.4 | 332 | D. |
| November | 110 | 5 | 13.5 | 803 | B. |
| December | 8 | 5 | 6.6 | 406 | C. |
| January | 365 | 8 | 67.7 | 4,160 | B. |
| February | 88 | 26 | 36.8 | 2,120 | B. |
| March | 630 | 26 | 84.1 | 5,170 | B. |
| April | 270 | 43 | 63.9 | 3,800 | B. |
| May | 375 | 43 | 107 | 6,580 | B. |
| June | 55 | 13 | 22.1 | 1,320 | B. |
| July | 13 | 3 | 5.7 | 350 | C. |
| August | 3 | 2 | 2.5 | 154 | C. |
| September | 19 | 2 | 3.9 | 232 | C. |
| The year | 630 | 2 | 35.0 | 25,400 | |
| 1912–13. | | | | | |
| October | 19 | 3 | 4.8 | 295 | C. |
| November | 745 | 5 | 45.5 | 2,710 | B. |
| December | 88 | 8 | 15.7 | 965 | B. |
| January | 375 | 19 | 63.1 | 3,880 | B. |
| February | 88 | 33 | 61.8 | 3,430 | B. |
| March | 177 | 33 | 74.5 | 4,580 | B. |
| April | 435 | 148 | 227 | 13,500 | A. |
| May | 245 | 29 | 90.5 | 5,560 | B. |
| June | 33 | 8 | 17.3 | 1,030 | B. |
| July | 10 | 4.5 | 6.19 | 381 | C. |
| August | 4.5 | 2 | 2.87 | 176 | C. |
| September | 3 | 2 | 2.43 | 145 | C. |
| The year | 745 | 2 | 50.7 | 36,700 | |

### BEAR RIVER NEAR COLFAX, CAL.

LOCATION.—In sec. 22, T. 15 N., R. 9 E., at Pacific Gas & Electric Co.'s diversion dam, about half a mile below mouth of Greenhorn River, and 3 miles north of Colfax.

RECORDS AVAILABLE.—November 1, 1911, to September 30, 1913. Record shows only flow over dam.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in three sections on left bank, 50 feet above dam. Two vertical staffs for low water have been installed later, one on right bank 25 feet above dam, and the other on left bank directly in line with crest of dam.

CHANNEL.—Gravel; shifting.

DISCHARGE MEASUREMENTS.—Made from cable 500 feet above dam or by wading.

DIVERSIONS AND STORAGE.—A small amount of storage has been developed above the station. Stored water from South Fork of Yuba River is diverted into this drainage basin above the station.

ACCURACY.—Rating curves fairly well defined; results fair.

COOPERATION.—Gage-height record furnished by Pacific Gas & Electric Co.

*Discharge measurements of Bear River and Bear River canal near Colfax, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height at cable. | Discharge at cable. | Discharge of canal. | Gage height at dam. | | Discharge over dam. |
|---|---|---|---|---|---|---|---|
| | | | | | Left bank.[a] | Right bank. | |
| | | *Feet.* | *Sec.-ft.* | *Sec.-ft.* | *Feet.* | *Feet.* | *Sec.-ft.* |
| Dec. 17 | Charles Leidl | 1.84 | 193 | 0 | [b] 5.63 | ..... | 193 |
| Mar. 3 | Lasley Lee | 2.00 | 153 | 0 | 5.57 | ..... | 153 |
| Apr. 8 | E. C. Murphy | 3.12 | 606 | 20 | 6.57 | ..... | 586 |
| May 1 | Lasley Lee | 2.78 | 342 | 64 | 6.31 | 5.57 | 275 |
| 1 | .....do | ..... | ..... | (c) | 6.21 | 5.54 | 247 |
| 8 | .....do | ..... | ..... | (c) | 6.24 | 5.57 | 242 |
| 9 | .....do | ..... | ..... | (c) | 6.40 | 5.72 | 438 |
| 11 | .....do | ..... | ..... | (c) | 6.19 | 5.49 | 213 |
| 18 | .....do | ..... | ..... | (c) | 6.13 | 5.43 | 187 |

[a] Gage in line with crest of dam. [b] Gage 50 feet above dam. [c] Discharge of canal not measured.

*Daily gage height, in feet, of Bear River near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 5.25 | 5.40 | 5.45 | 5.78 | 5.56 | 6.35 | 5.57 | 5.29 |
| 2 | ..... | 5.30 | 5.39 | 5.40 | 5.76 | 5.54 | 6.37 | 5.50 | 5.35 |
| 3 | ..... | 5.35 | 5.40 | 5.35 | 5.74 | 5.54 | 6.35 | 5.55 | 5.33 |
| 4 | ..... | 5.25 | 5.35 | 5.45 | 5.72 | 5.52 | 6.46 | 5.60 | 5.27 |
| 5 | ..... | 5.20 | 5.30 | 5.35 | 5.67 | 5.56 | 6.6 | 5.60 | 5.27 |
| 6 | ..... | 6.5 | 5.30 | 5.50 | 5.66 | 5.58 | 6.7 | 5.60 | 5.28 |
| 7 | ..... | 5.20 | 5.35 | 5.45 | 5.67 | 5.60 | 6.6 | 5.60 | 5.28 |
| 8 | ..... | 5.25 | 5.35 | 5.45 | 5.66 | 5.61 | 6.55 | 5.55 | 5.25 |
| 9 | ..... | 5.20 | 5.35 | 5.45 | 5.68 | 5.62 | 6.55 | 5.70 | 5.22 |
| 10 | ..... | 6.00 | 5.30 | 5.00 | 5.68 | 5.66 | 6.5 | 5.60 | 5.29 |
| 11 | ..... | 5.45 | 5.30 | 5.15 | 5.67 | 5.71 | 6.47 | 5.50 | 5.24 |
| 12 | ..... | 5.55 | 5.35 | 5.50 | 5.66 | 5.70 | ..... | 5.50 | 5.18 |
| 13 | ..... | 5.50 | 5.35 | 5.60 | 5.64 | 5.68 | ..... | 5.40 | 5.18 |
| 14 | ..... | 5.45 | 5.30 | 6.10 | 5.64 | 5.66 | ..... | 5.40 | 5.13 |
| 15 | ..... | 5.45 | 5.35 | 6.00 | 5.64 | 5.62 | 6.48 | 5.40 | 5.13 |
| 16 | ..... | 5.50 | 5.60 | 5.80 | 5.64 | 5.54 | 6.49 | 5.40 | 5.08 |
| 17 | ..... | 5.45 | 5.55 | 5.85 | 5.66 | 5.62 | 6.48 | 5.40 | 5.08 |
| 18 | ..... | 5.50 | 5.35 | 7.1 | 5.65 | 5.71 | 6.49 | 5.40 | ..... |
| 19 | ..... | 5.50 | 5.30 | 6.6 | 5.62 | 5.72 | 6.48 | 5.40 | ..... |
| 20 | ..... | 5.45 | 5.30 | 6.5 | 5.60 | 5.71 | 6.48 | 5.35 | ..... |
| 21 | ..... | 5.40 | 5.28 | 6.00 | 5.59 | 5.68 | 6.48 | 5.35 | ..... |
| 22 | ..... | 5.40 | 5.30 | 5.87 | 5.56 | ..... | 6.48 | 5.35 | ..... |
| 23 | 5.60 | 5.50 | 5.30 | 5.77 | 5.56 | ..... | 6.49 | 5.35 | ..... |
| 24 | 5.35 | 5.52 | 5.35 | 5.72 | 5.64 | 5.83 | 6.48 | 5.35 | ..... |
| 25 | ..... | 5.50 | 5.38 | 5.72 | 5.56 | 5.76 | 6.39 | 5.35 | ..... |
| 26 | ..... | 5.42 | 5.35 | 5.77 | 5.59 | 5.83 | 6.30 | 5.30 | ..... |
| 27 | ..... | 5.40 | 5.30 | 5.68 | 5.58 | 5.82 | 6.30 | 5.35 | ..... |
| 28 | ..... | 5.45 | 5.35 | 5.77 | 5.55 | 5.94 | 6.30 | 5.45 | ..... |
| 29 | 5.35 | 5.40 | 5.35 | 5.81 | ..... | 5.97 | 6.31 | 5.40 | ..... |
| 30 | 5.30 | 5.48 | 5.50 | 5.75 | ..... | 6.02 | 6.34 | 5.32 | ..... |
| 31 | 5.35 | ..... | 5.50 | 5.81 | ..... | 6.10 | ..... | 5.30 | ..... |

NOTE.—Oct. 1 to Jan. 31, readings on gage on left bank 50 feet above dam; Feb. 1 to Apr. 30, gage on left bank and in line with crest of dam; May 1 to June 17, gage on right bank.

*Daily discharge, in second-feet, of Bear River (over dam) near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 22 | 80 | 102 | 278 | 155 | 370 | 284 | 90 |
| 2 | ..... | 40 | 76 | 80 | 266 | 145 | 390 | 225 | 125 |
| 3 | ..... | 60 | 80 | 60 | 254 | 145 | 370 | 268 | 113 |
| 4 | ..... | 22 | 60 | 102 | 242 | 135 | 480 | 310 | 80 |
| 5 | ..... | 5 | 40 | 60 | 214 | 155 | 630 | 310 | 80 |
| 6 | ..... | 825 | 40 | 125 | 208 | 165 | 740 | 310 | 85 |
| 7 | ..... | 5 | 60 | 102 | 214 | 175 | 630 | 310 | 85 |
| 8 | ..... | 22 | 60 | 102 | 208 | 180 | 575 | 268 | 70 |
| 9 | ..... | 5 | 60 | 102 | 219 | 186 | 575 | 410 | 55 |
| 10 | ..... | 425 | 40 | 0 | 219 | 208 | 520 | 310 | 90 |
| 11 | ..... | 102 | 40 | 0 | 214 | 236 | 490 | 225 | 65 |
| 12 | ..... | 150 | 60 | 125 | 208 | 230 | 490 | 225 | 38 |
| 13 | ..... | 125 | 60 | 175 | 197 | 219 | 500 | 155 | 38 |
| 14 | ..... | 102 | 40 | 500 | 197 | 208 | 500 | 155 | 19 |
| 15 | ..... | 102 | 60 | 425 | 197 | 186 | 500 | 155 | 19 |
| 16 | ..... | 125 | 175 | 290 | 197 | 145 | 510 | 155 | ..... |
| 17 | ..... | 102 | 150 | 322 | 208 | 186 | 500 | 155 | ..... |
| 18 | ..... | 125 | 60 | 1,370 | 202 | 34 | 510 | 155 | ..... |
| 19 | ..... | 125 | 40 | 910 | 186 | 35 | 500 | 155 | ..... |
| 20 | ..... | 102 | 40 | 825 | 175 | 34 | 500 | 125 | ..... |
| 21 | ..... | 80 | 33 | 425 | 170 | 30 | 500 | 125 | ..... |
| 22 | ..... | 80 | 40 | 336 | 155 | 38 | 500 | 125 | ..... |
| 23 | 175 | 125 | 40 | 272 | 155 | 46 | 510 | 125 | ..... |
| 24 | 60 | 135 | 60 | 242 | 197 | 55 | 500 | 125 | ..... |
| 25 | 0 | 125 | 72 | 242 | 155 | 42 | 410 | 125 | ..... |
| 26 | 0 | 89 | 60 | 272 | 170 | 55 | 320 | 95 | ..... |
| 27 | 0 | 80 | 40 | 219 | 165 | 53 | 320 | 125 | ..... |
| 28 | 0 | 102 | 60 | 272 | 150 | 87 | 320 | 190 | ..... |
| 29 | 60 | 80 | 60 | 296 | ..... | 98 | 330 | 155 | ..... |
| 30 | 40 | 116 | 125 | 265 | ..... | 121 | 360 | 107 | ..... |
| 31 | 60 | ..... | 125 | 296 | ..... | 165 | ..... | 95 | ..... |

NOTE.—Discharge determined from three fairly well defined rating curves applicable as follows: Oct. 1 to Mar. 17, Mar. 18 to Apr. 30, and May 1 to June 17. All water was diverted into canal Oct. 1–22 and 25–28, Jan. 10 and 11 and June 18 to Sept. 30. The water diverted into the canal Jan. 10 and 11 and on certain days in March and April was probably spilled out before it reached the canal gage, as the canal record shows no flow for those periods. Discharge interpolated Mar. 22 and 23 and Apr. 12 to 14.

*Monthly discharge of Bear River (over dam) near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 175 | 0 | 12.7 | 781 | C. |
| November | 825 | 5 | 120 | 7,140 | C. |
| December | 175 | 33 | 65.7 | 4,040 | C. |
| January | 1,370 | 0 | 287 | 17,600 | B. |
| February | 278 | 150 | 201 | 11,200 | B. |
| March | 236 | 30 | 127 | 7,810 | C. |
| April | 740 | 320 | 478 | 28,400 | C. |
| May | 410 | 95 | 195 | 12,000 | B. |
| June | 125 | 0 | 35.1 | 2,090 | C. |
| July | 0 | 0 | 0 | 0 | |
| August | 0 | 0 | 0 | 0 | |
| September | 0 | 0 | 0 | 0 | |
| The year | 1,370 | 0 | 126 | 91,100 | |

## BEAR RIVER CANAL NEAR COLFAX, CAL.

LOCATION.—In sec. 22, T. 15 N., R. 9 E., 750 feet below headgate at diversion dam, about 3 miles north of Colfax.

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1913.

GAGE.—Float type in stilling box on right side of flume about 40 feet below spillway.

DISCHARGE.—Made from foot-plank across flume at gage.

COOPERATION.—Record furnished by Pacific Gas & Electric Co.

There is a waste gate between the head gate and the gage and occasionally water is returned to the river. The records do not show the quantity thus diverted and returned to the river.

*Discharge measurements of Bear River canal near Colfax, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 17 | Charles Leidl | ..... | [a] 0 | Aug. 29[b] | Lasley Lee | 2.51 | 54 |
| Mar. 3 | Lasley Lee | ..... | [a] 0 | | | | |

[a] Canal empty on account of repairs. [b] No water flowing over dam.

*Daily gage height, in feet, of Bear River canal near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | May. | June. | July. | Aug. | Sept. | Day. | Oct. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.28 | 3.64 | 3.30 | 3.18 | 3.25 | 3.10 | 16 | 2.06 | 3.30 | 3.26 | 3.26 | 3.16 | 3.10 |
| 2 | 2.28 | 3.57 | 3.30 | 3.22 | 3.25 | 3.09 | 17 | 2.00 | 3.30 | 3.24 | 3.25 | 3.13 | 3.10 |
| 3 | 2.29 | 3.60 | 3.30 | 3.20 | 3.24 | 3.10 | 18 | 2.02 | 3.30 | 3.30 | 3.30 | 3.12 | 3.10 |
| 4 | 2.30 | 3.60 | 3.28 | 3.06 | 3.25 | 3.10 | 19 | 1.95 | 3.30 | 3.30 | 3.26 | 3.12 | 3.10 |
| 5 | 2.24 | 3.60 | 3.28 | 3.05 | 3.25 | 3.10 | 20 | 2.00 | 3.30 | 3.34 | 3.26 | 3.12 | 3.10 |
| 6 | 2.29 | 3.60 | 3.22 | 3.04 | 3.25 | 3.12 | 21 | 2.04 | 3.30 | 3.34 | 3.22 | 3.08 | 3.11 |
| 7 | 2.20 | 3.60 | 3.26 | 3.05 | 3.25 | 3.11 | 22 | 2.07 | 3.30 | 3.32 | 3.28 | 3.11 | 3.20 |
| 8 | 2.04 | 3.60 | 3.24 | 3.06 | 3.24 | 3.11 | 23 | 2.20 | 3.30 | 3.32 | 3.28 | 3.10 | 3.20 |
| 9 | 2.20 | 3.63 | 3.28 | 3.50 | 3.26 | 3.10 | 24 | 2.45 | 3.30 | 3.32 | 3.30 | 3.08 | 3.20 |
| 10 | 2.20 | 3.60 | 3.32 | 3.08 | 3.26 | 3.05 | 25 | 2.35 | 3.30 | 3.32 | 3.23 | 3.14 | 3.20 |
| 11 | 2.14 | 3.60 | 3.30 | 3.08 | 3.20 | 3.02 | 26 | 2.40 | 3.28 | 3.30 | 3.30 | 3.14 | 3.20 |
| 12 | 2.05 | 3.60 | 3.28 | 3.08 | 3.22 | 3.02 | 27 | 2.12 | 3.28 | 3.20 | 3.27 | 3.14 | 3.20 |
| 13 | 2.05 | 3.58 | 3.24 | 3.15 | 3.22 | 3.02 | 28 | 2.20 | 3.30 | 3.20 | 3.30 | 3.14 | 3.20 |
| 14 | 2.12 | 3.32 | 3.24 | 3.13 | 3.22 | 3.02 | 29 | 2.30 | 3.30 | 3.18 | 3.27 | 3.10 | 3.20 |
| 15 | 2.02 | 3.30 | 3.26 | 3.18 | 3.16 | 3.10 | 30 | 2.30 | 3.28 | 3.18 | 3.28 | 3.10 | 3.20 |
| | | | | | | | 31 | 2.25 | 3.30 | ..... | 3.27 | 3.08 | ..... |

[1] Formerly published as Pacific Gas & Electric Co.'s canal.

*Daily discharge, in second-feet, of Bear River canal near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | May. | June. | July. | Aug. | Sept. | Day. | Oct. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | 84 | 68 | 60 | 63 | 57 | 16 | 28 | 68 | 66 | 64 | 60 | 57 |
| 2 | 33 | 79 | 68 | 62 | 63 | 56 | 17 | 26 | 68 | 65 | 63 | 58 | 57 |
| 3 | 33 | 80 | 68 | 61 | 63 | 57 | 18 | 27 | 68 | 68 | 66 | 58 | 57 |
| 4 | 34 | 80 | 66 | 56 | 63 | 57 | 19 | 25 | 68 | 68 | 64 | 58 | 57 |
| 5 | 32 | 80 | 66 | 55 | 63 | 57 | 20 | 26 | 68 | 69 | 64 | 58 | 57 |
| 6 | 33 | 80 | 64 | 55 | 63 | 58 | 21 | 28 | 68 | 69 | 62 | 56 | 58 |
| 7 | 31 | 80 | 66 | 55 | 63 | 58 | 22 | 28 | 68 | 68 | 65 | 57 | 61 |
| 8 | 28 | 80 | 65 | 56 | 63 | 58 | 23 | 31 | 68 | 68 | 65 | 57 | 61 |
| 9 | 31 | 81 | 66 | 75 | 64 | 57 | 24 | 37 | 68 | 68 | 66 | 56 | 61 |
| 10 | 31 | 80 | 68 | 56 | 64 | 55 | 25 | 35 | 68 | 68 | 62 | 59 | 61 |
| 11 | 30 | 80 | 68 | 56 | 61 | 54 | 26 | 36 | 66 | 68 | 66 | 55 | 61 |
| 12 | 28 | 80 | 66 | 56 | 62 | 54 | 27 | 29 | 66 | 63 | 64 | 59 | 61 |
| 13 | 28 | 79 | 65 | 59 | 62 | 54 | 28 | 31 | 68 | 63 | 66 | 59 | 61 |
| 14 | 29 | 68 | 65 | 58 | 62 | 54 | 29 | 34 | 68 | 62 | 64 | 57 | 61 |
| 15 | 27 | 68 | 66 | 60 | 60 | 57 | 30 | 34 | 66 | 62 | 65 | 57 | 61 |
| | | | | | | | 31 | 32 | 68 | ..... | 64 | 56 | ..... |

NOTE.—See footnote to daily discharge in description of Bear River near Colfax, Cal.

*Monthly discharge of Bear River canal near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| October | 37 | 25 | 30.6 | 1,880 |
| May | 84 | 66 | 72.9 | 4,480 |
| June | 69 | 62 | 66.3 | 3,950 |
| July | 75 | 55 | 61.6 | 3,790 |
| August | 64 | 56 | 60.1 | 3,700 |
| September | 61 | 54 | 57.8 | 3,440 |

NOTE.—Monthly discharge computed by engineers of the United States Geological Survey.

### BEAR RIVER AT VAN TRENT, CAL.

LOCATION.—In the SE. ¼ sec. 21, T. 14 N., R. 6 E., below highway bridge at McCourtney crossing, 1 mile northwest of Van Trent, and 8 miles northeast of Wheatland.

RECORDS AVAILABLE.—October 8, 1904, to September 30, 1913.

DRAINAGE AREA.—263 square miles.

GAGE.—Staff in five sections on left bank 500 feet below bridge.

CHANNEL.—Solid rock, bowlders, and gravel. Shifts slightly at high water.

DISCHARGE MEASUREMENTS.—Made by wading or from cable half a mile below gage; cable installed June 26, 1913.

DIVERSIONS AND STORAGE.—Water is diverted above station for power and irrigation. A small amount of storage is developed on headwaters of stream. Stored water from South Fork of Yuba River is diverted into this drainage basin above the station near Colfax.

ACCURACY.—Results good at medium and low stages. Estimates for high water are approximate, as rating curve is not well defined.

*Discharge measurements of Bear River at Van Trent, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 13 | J. E. Stewart | 1.00 | 19 | June 26 | R. C. Rice | .93 | 14 |
| Jan. 10 | E. C. Murphy | 1.71 | 112 | | | | |

*Daily gage height, in feet, of Bear River at Van Trent, Cal., for the year ending Sept. 30, 1913.*

[Hermann Ernestus, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9 | 1.15 | 1.55 | 2.25 | 2.2 | 1.75 | 2.5 | 2.2 | 1.5 | 1.15 | 1.0 | 0.95 |
| 2 | .85 | 1.1 | 1.5 | 1.9 | 2.15 | 1.7 | 2.5 | 2.15 | 1.65 | 1.1 | 1.05 | .9 |
| 3 | .9 | 1.15 | 1.45 | 1.8 | 2.1 | 1.7 | 2.4 | 2.05 | 1.55 | 1.1 | 1.05 | .85 |
| 4 | .85 | 1.2 | 1.5 | 1.75 | 2.0 | 1.7 | 3.1 | 2.05 | 1.55 | 1.15 | 1.05 | .9 |
| 5 | .85 | 1.25 | 1.5 | 1.65 | 1.95 | 1.7 | 2.8 | 2.0 | 1.5 | 1.2 | 1.0 | .95 |
| 6 | .95 | 3.8 | 1.45 | 1.6 | 1.9 | 1.75 | 3.4 | 2.0 | 1.45 | 1.15 | 1.0 | .9 |
| 7 | 1.0 | 3.0 | 1.45 | 1.65 | 1.9 | 1.75 | 3.1 | 2.0 | 1.5 | 1.25 | 1.0 | .95 |
| 8 | .9 | 2.15 | 1.4 | 1.75 | 1.9 | 1.8 | 2.8 | 2.0 | 1.45 | 1.05 | 1.05 | 1.05 |
| 9 | .9 | 1.95 | 1.4 | 1.75 | 1.9 | 1.8 | 2.9 | 2.05 | 1.4 | 1.05 | 1.0 | 1.0 |
| 10 | .9 | 3.4 | 1.4 | 1.9 | 1.9 | 1.8 | 2.5 | 2.3 | 1.35 | 1.2 | .95 | 1.0 |
| 11 | .95 | 2.6 | 1.4 | 1.6 | 1.85 | 1.9 | 2.55 | 2.0 | 1.55 | 1.1 | 1.05 | 1.0 |
| 12 | .9 | 2.2 | 1.4 | 1.75 | 1.85 | 1.95 | 2.5 | 1.9 | 1.55 | 1.15 | 1.0 | 1.0 |
| 13 | .95 | 2.0 | 1.45 | 2.45 | 1.85 | 1.9 | 2.55 | 1.85 | 1.3 | 1.15 | 1.0 | 1.0 |
| 14 | 1.0 | 1.95 | 1.55 | 5.9 | 1.8 | 1.85 | 2.7 | 1.75 | 1.25 | 1.2 | 1.0 | 1.0 |
| 15 | .95 | 1.9 | 2.8 | 4.9 | 1.85 | 1.8 | 2.85 | 1.65 | 1.2 | 1.2 | 1.0 | 1.05 |
| 16 | .9 | 1.85 | 2.15 | 4.8 | 1.85 | 1.75 | 2.6 | 1.65 | 1.2 | 1.1 | 1.0 | 1.0 |
| 17 | .9 | 1.8 | 2.85 | 3.7 | 1.85 | 1.7 | 2.45 | 1.6 | 1.1 | 1.05 | 1.0 | .95 |
| 18 | .95 | 1.7 | 2.25 | 8.0 | 1.85 | 2.0 | 2.75 | 1.9 | 1.05 | 1.05 | 1.05 | 1.0 |
| 19 | .9 | 1.65 | 2.05 | 4.8 | 1.8 | 2.1 | 2.7 | 1.8 | 1.15 | 1.05 | .95 | 1.0 |
| 20 | .95 | 2.15 | 1.95 | 3.2 | 1.8 | 2.05 | 2.6 | 1.75 | 1.15 | 1.05 | 1.0 | .95 |
| 21 | 1.0 | 1.9 | 1.85 | 2.65 | 1.8 | 1.95 | 2.6 | 1.7 | 1.15 | 1.05 | .95 | 1.0 |
| 22 | 1.0 | 1.8 | 1.8 | 2.45 | 1.8 | 2.9 | 2.65 | 1.65 | 1.2 | 1.0 | 1.0 | 1.05 |
| 23 | 1.8 | 1.95 | 1.75 | 2.4 | 1.8 | 3.0 | 2.65 | 1.6 | 1.1 | .95 | .95 | 1.0 |
| 24 | 1.5 | 1.7 | 1.7 | 2.2 | 1.8 | 2.8 | 2.45 | 1.55 | 1.0 | 1.05 | .9 | 1.0 |
| 25 | 1.3 | 1.65 | 1.65 | 2.15 | 1.85 | 2.7 | 2.35 | 1.5 | 1.0 | 1.1 | .9 | .9 |
| 26 | 1.3 | 1.6 | 1.6 | 2.15 | 1.8 | 2.5 | 2.3 | 1.55 | .9 | 1.05 | .85 | .95 |
| 27 | 1.2 | 1.6 | 1.55 | 2.2 | 1.8 | 2.45 | 2.35 | 1.45 | 1.0 | 1.1 | .9 | 1.0 |
| 28 | 1.15 | 1.55 | 1.65 | 2.2 | 1.8 | 2.4 | 2.4 | 1.8 | 1.0 | 1.1 | .8 | .95 |
| 29 | 1.25 | 1.7 | 1.6 | 2.2 | ..... | 2.35 | 2.35 | 1.8 | 1.2 | 1.1 | 1.0 | 1.0 |
| 30 | 1.4 | 1.6 | 1.6 | 2.15 | ..... | 2.4 | 2.3 | 1.65 | 1.2 | 1.05 | .95 | 1.0 |
| 31 | 1.2 | ..... | 1.8 | 2.15 | ..... | 2.5 | ..... | 1.55 | ..... | 1.05 | .9 | ..... |

*Daily discharge, in second-feet, of Bear River at Van Trent, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 32 | 86 | 235 | 222 | 122 | 305 | 222 | 77 | 32 | 19 | 16 |
| 2 | 10 | 27 | 77 | 151 | 210 | 112 | 305 | 210 | 103 | 27 | 23 | 13 |
| 3 | 13 | 32 | 70 | 131 | 197 | 112 | 276 | 185 | 86 | 27 | 23 | 10 |
| 4 | 10 | 37 | 77 | 122 | 173 | 112 | 507 | 185 | 86 | 32 | 23 | 13 |
| 5 | 10 | 43 | 77 | 103 | 162 | 112 | 400 | 173 | 77 | 37 | 19 | 16 |
| 6 | 16 | 791 | 70 | 94 | 151 | 122 | 624 | 173 | 70 | 32 | 19 | 13 |
| 7 | 19 | 470 | 70 | 103 | 151 | 122 | 507 | 173 | 77 | 43 | 19 | 16 |
| 8 | 13 | 210 | 62 | 122 | 151 | 131 | 400 | 173 | 70 | 23 | 23 | 23 |
| 9 | 13 | 162 | 62 | 122 | 151 | 131 | 434 | 185 | 62 | 23 | 19 | 19 |
| 10 | 13 | 624 | 62 | 151 | 151 | 131 | 305 | 248 | 56 | 37 | 16 | 19 |
| 11 | 16 | 335 | 62 | 94 | 141 | 151 | 320 | 173 | 86 | 27 | 23 | 19 |
| 12 | 13 | 222 | 62 | 122 | 141 | 162 | 305 | 151 | 86 | 32 | 19 | 19 |
| 13 | 16 | 173 | 70 | 290 | 141 | 151 | 320 | 141 | 49 | 32 | 19 | 19 |
| 14 | 19 | 162 | 86 | 1,920 | 131 | 141 | 367 | 122 | 43 | 37 | 19 | 19 |
| 15 | 16 | 151 | 400 | 1,320 | 141 | 131 | 417 | 103 | 37 | 37 | 19 | 23 |
| 16 | 13 | 141 | 210 | 1,260 | 141 | 122 | 335 | 103 | 37 | 27 | 19 | 19 |
| 17 | 13 | 130 | 417 | 748 | 141 | 112 | 290 | 94 | 27 | 23 | 19 | 16 |
| 18 | 16 | 112 | 235 | 3,650 | 141 | 173 | 384 | 151 | 23 | 23 | 23 | 19 |
| 19 | 13 | 103 | 185 | 1,260 | 131 | 197 | 367 | 131 | 32 | 23 | 16 | 19 |
| 20 | 16 | 210 | 162 | 545 | 131 | 185 | 335 | 122 | 32 | 23 | 19 | 16 |
| 21 | 19 | 151 | 141 | 351 | 131 | 162 | 335 | 112 | 32 | 23 | 16 | 19 |
| 22 | 19 | 131 | 131 | 290 | 131 | 434 | 351 | 103 | 37 | 19 | 19 | 23 |
| 23 | 131 | 162 | 122 | 276 | 131 | 470 | 351 | 94 | 27 | 16 | 16 | 19 |
| 24 | 77 | 112 | 112 | 222 | 131 | 400 | 290 | 86 | 19 | 23 | 13 | 19 |
| 25 | 49 | 103 | 103 | 210 | 141 | 367 | 262 | 77 | 19 | 27 | 13 | 13 |
| 26 | 49 | 94 | 94 | 210 | 131 | 305 | 248 | 86 | 13 | 23 | 10 | 16 |
| 27 | 37 | 94 | 86 | 222 | 131 | 290 | 262 | 70 | 19 | 27 | 13 | 19 |
| 28 | 32 | 86 | 103 | 222 | 131 | 276 | 276 | 131 | 19 | 27 | 8 | 16 |
| 29 | 43 | 112 | 94 | 222 | ..... | 262 | 262 | 131 | 37 | 27 | 19 | 19 |
| 30 | 62 | 94 | 94 | 210 | ..... | 276 | 248 | 103 | 37 | 23 | 16 | 19 |
| 31 | 37 | ..... | 131 | 210 | ..... | 305 | ..... | 86 | ..... | 23 | 13 | ..... |

NOTE.—Discharge determined from a rating curve fairly well defined below 300 second-feet.

*Monthly discharge of Bear River at Van Trent, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 131 | 10 | 27.0 | 1,660 | B. |
| November | 791 | 27 | 177 | 10,500 | B. |
| December | 417 | 62 | 123 | 7,560 | B. |
| January | 3,650 | 94 | 490 | 30,100 | C. |
| February | 222 | 131 | 148 | 8,220 | A. |
| March | 470 | 112 | 203 | 12,500 | B. |
| April | 624 | 248 | 346 | 20,600 | C. |
| May | 248 | 70 | 139 | 8,550 | A. |
| June | 103 | 13 | 49.2 | 2,930 | B. |
| July | 43 | 16 | 27.6 | 1,700 | B. |
| August | 23 | 8 | 17.9 | 1,100 | B. |
| September | 23 | 10 | 17.6 | 1,050 | B. |
| The year | 3,650 | 8 | 147 | 106,000 | |

NOTE.—Maximum stage recorded during year, 8.4 feet at 3 p. m. Jan. 18 (approximate discharge, 4,100 second-feet).

## AMERICAN RIVER AND TRIBUTARIES.

### NORTH FORK OF AMERICAN RIVER NEAR COLFAX, CAL.

LOCATION.—In the SW. ¼ sec. 30, T. 14 N., R. 10 E., at bridge on Colfax-Forest Hill road, 150 feet below mouth of Shirttail Canyon Creek, 11 miles above junction with the Middle Fork, and 5 miles southeast of Colfax.

RECORDS AVAILABLE.—August 16, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in three sections about 30 feet below bridge; low-water section on left bank; other sections on right bank. Gurley electric water-stage recorder was installed on right bank 50 feet below bridge in December, 1912, at same datum.

CHANNEL.—Gravel and small bowlders, tailings from placer mining; may shift during high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—A small ditch on the headwaters of the North Fork of the North Fork diverts water above the station.

ACCURACY.—Rating curves well defined; results excellent.

*Discharge measurements of North Fork of American River near Colfax, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 27 | Charles Leidl | [a] 3.29 | 135 | Apr. 7 | E. C. Murphy | 5.02 | 1,120 |
| Dec. 17 | do | [b] 3.68 | 330 | May 9 | Lasley Lee | 6.24 | 2,640 |
| 19 | do | 3.57 | 232 | 18 | do | 6.13 | 2,440 |
| Apr. 7 | E. C. Murphy | 5.06 | 1,140 | Aug. 29 | do | 3.20 | 72 |

[a] Original staff gage.
[b] Determined by relation curve from staff-gage reading 3.78 feet.

*Daily gage height, in feet, of North Fork of American River near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 3.28 | 3.65 | 3.99 | 3.72 | 5.20 | ..... | 4.80 | 3.56 | 3.30 | 3.18 |
| 2 | ..... | 3.26 | 3.44 | 4.01 | 3.73 | 5.00 | ..... | 4.70 | 3.54 | 3.30 | 3.18 |
| 3 | ..... | 3.24 | 3.44 | 3.98 | 3.72 | 4.73 | ..... | 4.69 | 3.53 | 3.29 | 3.18 |
| 4 | ..... | 3.25 | 3.43 | 3.91 | 3.78 | 4.90 | ..... | 4.66 | 3.59 | 3.28 | 3.18 |
| 5 | ..... | 3.25 | 3.34 | 3.88 | 3.83 | 5.41 | ..... | 4.60 | 3.54 | 3.27 | 3.17 |
| 6 | ..... | 3.23 | 3.40 | 3.85 | 3.94 | 5.23 | ..... | 4.61 | 3.50 | 3.26 | 3.16 |
| 7 | ..... | 3.21 | 3.44 | 3.84 | 4.04 | 5.04 | ..... | 4.51 | 3.48 | 3.24 | 3.16 |
| 8 | ..... | 3.20 | 3.42 | 3.85 | 4.10 | 4.96 | 5.40 | 4.38 | 3.46 | 3.24 | 3.16 |
| 9 | ..... | 3.18 | 3.42 | 3.86 | 4.18 | 5.04 | 6.3 | 4.24 | 3.44 | 3.23 | 3.15 |
| 10 | ..... | 3.18 | 3.46 | 3.87 | 4.24 | 5.21 | 5.61 | 4.16 | 3.41 | 3.23 | 3.15 |
| 11 | ..... | 3.20 | 3.33 | 3.89 | 4.22 | 5.41 | 5.22 | 4.10 | 3.39 | 3.23 | 3.15 |
| 12 | ..... | 3.20 | 3.39 | 3.90 | ..... | 5.49 | 5.16 | 4.08 | 3.37 | 3.23 | 3.14 |
| 13 | ..... | 3.20 | 3.55 | 3.88 | ..... | 5.56 | 5.00 | 4.07 | 3.36 | 3.22 | 3.14 |
| 14 | ..... | 3.20 | 3.98 | 3.88 | ..... | 5.26 | 5.05 | 4.04 | 3.35 | 3.22 | 3.14 |
| 15 | ..... | 3.50 | 4.36 | 3.92 | ..... | 5.08 | 5.15 | 3.99 | 3.34 | 3.22 | 3.15 |
| 16 | ..... | 4.02 | 4.23 | 3.99 | ..... | 4.96 | 5.33 | 3.92 | 3.33 | 3.22 | 3.15 |
| 17 | ..... | 3.78 | 4.14 | 4.06 | ..... | 4.97 | 5.23 | 3.88 | 3.32 | 3.21 | 3.14 |
| 18 | ..... | 3.62 | 5.05 | 4.07 | ..... | 5.11 | 6.0 | 3.86 | 3.32 | 3.21 | 3.14 |
| 19 | ..... | 3.58 | 4.98 | 4.03 | ..... | 4.97 | 5.51 | 3.81 | 3.32 | 3.20 | 3.14 |
| 20 | ..... | 3.52 | 4.35 | 3.92 | ..... | 5.18 | 5.35 | 3.76 | 3.32 | 3.20 | 3.14 |
| 21 | ..... | 3.47 | 4.08 | 3.90 | 4.09 | 5.27 | 5.39 | 3.73 | 3.32 | 3.19 | 3.14 |
| 22 | ..... | 3.41 | 3.96 | 3.86 | 4.25 | 5.49 | 5.48 | 3.70 | 3.33 | 3.19 | 3.14 |
| 23 | ..... | 3.41 | 3.90 | 3.80 | 4.24 | 5.50 | 5.43 | 3.70 | 3.34 | 3.19 | 3.13 |
| 24 | ..... | 3.39 | 3.79 | 3.80 | 4.16 | 5.56 | 5.32 | 3.76 | 3.39 | 3.19 | 3.12 |
| 25 | ..... | 3.39 | 3.80 | 3.79 | 4.14 | 5.76 | 5.26 | 3.70 | 3.35 | 3.19 | 3.13 |
| 26 | ..... | 3.36 | 3.86 | 3.77 | 4.11 | 5.49 | 5.20 | 3.66 | 3.34 | 3.18 | 3.15 |
| 27 | 3.30 | 3.33 | 3.89 | 3.77 | 4.13 | 5.96 | 5.14 | 3.68 | 3.36 | 3.17 | 3.14 |
| 28 | ..... | 3.34 | 3.93 | 3.74 | 4.19 | 5.46 | 5.06 | 3.64 | 3.47 | 3.18 | 3.10 |
| 29 | 3.28 | 3.34 | 3.95 | ..... | 4.22 | 5.24 | 4.89 | 3.60 | 3.40 | 3.20 | 3.21 |
| 30 | 3.28 | 3.38 | 3.95 | ..... | 4.56 | 5.02 | 4.91 | 3.58 | 3.37 | 3.19 | 3.58 |
| 31 | ..... | 3.47 | 3.95 | ..... | 4.93 | ..... | 4.88 | ..... | 3.33 | 3.18 | ..... |

NOTE.—Staff gage read Nov. 27 to Dec. 17, 1912; record from Gurley electric water-stage recorder after that date.

*Daily discharge, in second-feet, of North Fork of American River near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 122 | 270 | 454 | 306 | 1,260 | ..... | 940 | 225 | 110 | 69 |
| 2 | ..... | 116 | 168 | 466 | 312 | 1,090 | ..... | 875 | 215 | 110 | 69 |
| 3 | ..... | 111 | 168 | 449 | 306 | 894 | ..... | 868 | 210 | 106 | 69 |
| 4 | ..... | 114 | 164 | 410 | 339 | 1,010 | ..... | 849 | 240 | 103 | 69 |
| 5 | ..... | 114 | 126 | 394 | 366 | 1,460 | ..... | 810 | 215 | 100 | 66 |
| 6 | ..... | 108 | 150 | 378 | 427 | 1,290 | ..... | 816 | 195 | 96 | 63 |
| 7 | ..... | 103 | 168 | 372 | 482 | 1,120 | ..... | 756 | 186 | 89 | 63 |
| 8 | ..... | 100 | 159 | 378 | 515 | 1,060 | 1,450 | 678 | 177 | 89 | 63 |
| 9 | ..... | 95 | 159 | 383 | 559 | 1,120 | 2,720 | 594 | 168 | 86 | 60 |
| 10 | ..... | 95 | 177 | 388 | 594 | 1,270 | 1,690 | 548 | 154 | 86 | 60 |
| 11 | ..... | 100 | 122 | 400 | 582 | 1,460 | 1,280 | 515 | 146 | 86 | 60 |
| 12 | ..... | 100 | 146 | 405 | ..... | 1,550 | 1,220 | 504 | 138 | 86 | 57 |
| 13 | ..... | 100 | 220 | 394 | ..... | 1,630 | 1,090 | 498 | 134 | 82 | 57 |
| 14 | ..... | 100 | 449 | 394 | ..... | 1,310 | 1,130 | 482 | 130 | 82 | 57 |
| 15 | ..... | 192 | 666 | 416 | ..... | 1,150 | 1,220 | 454 | 126 | 82 | 60 |
| 16 | ..... | 421 | 588 | 454 | ..... | 1,060 | 1,380 | 416 | 122 | 82 | 60 |
| 17 | ..... | 303 | 537 | 493 | ..... | 1,070 | 1,290 | 394 | 118 | 78 | 57 |
| 18 | ..... | 255 | 1,130 | 498 | ..... | 1,180 | 2,230 | 383 | 118 | 78 | 57 |
| 19 | ..... | 235 | 1,070 | 476 | ..... | 1,070 | 1,570 | 356 | 118 | 75 | 57 |
| 20 | ..... | 205 | 660 | 416 | ..... | 1,240 | 1,400 | 328 | 118 | 75 | 57 |
| 21 | ..... | 182 | 504 | 405 | 510 | 1,320 | 1,440 | 312 | 118 | 72 | 57 |
| 22 | ..... | 154 | 438 | 383 | 600 | 1,550 | 1,540 | 295 | 122 | 72 | 57 |
| 23 | ..... | 154 | 405 | 350 | 594 | 1,560 | 1,480 | 295 | 126 | 72 | 54 |
| 24 | ..... | 146 | 344 | 350 | 548 | 1,630 | 1,370 | 328 | 146 | 72 | 51 |
| 25 | ..... | 146 | 350 | 344 | 537 | 1,890 | 1,310 | 295 | 130 | 72 | 54 |
| 26 | ..... | 134 | 383 | 334 | 520 | 1,550 | 1,260 | 275 | 126 | 69 | 60 |
| 27 | 127 | 122 | 400 | 334 | 532 | 2,170 | 1,210 | 285 | 134 | 66 | 57 |
| 28 | 124 | 126 | 422 | 317 | 564 | 1,520 | 1,140 | 265 | 182 | 69 | 60 |
| 29 | 122 | 126 | 432 | ..... | 582 | 1,300 | 1,000 | 245 | 150 | 75 | 75 |
| 30 | 122 | 142 | 432 | ..... | 786 | 1,110 | 1,020 | 235 | 138 | 72 | 69 |
| 31 | ..... | 182 | 432 | ..... | 1,030 | ..... | 996 | ..... | 122 | 69 | ..... |

NOTE.—Discharge determined from two well-defined rating curves applicable Nov. 27 to Dec. 17 and Dec. 18, to Sept. 30. Discharge interpolated Nov. 28. Mean discharge Mar. 12–20 estimated as 545 second-feet; May 1–7 estimated as 1,280 second-feet.

*Monthly discharge of North Fork of American River near Colfax, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| Nov. 27-30 | 127 | 122 | 124 | 984 | A. |
| December | 421 | 95 | 152 | 9,350 | A. |
| January | 1,130 | 122 | 382 | 23,500 | A. |
| February | 498 | 317 | 401 | 22,300 | A. |
| March | 1,030 | 306 | 532 | 32,700 | A. |
| April | 2,170 | 894 | 1,330 | 79,100 | A. |
| May | 2,720 | 996 | 1,370 | 84,200 | A. |
| June | 940 | 235 | 496 | 29,500 | A. |
| July | 240 | 118 | 153 | 9,410 | A. |
| August | 110 | 66 | 82.6 | 5,080 | A. |
| September | 75 | 51 | 60.8 | 3,620 | A. |
| The period | | | | 300,000 | |

### AMERICAN RIVER AT FAIROAKS, CAL.

LOCATION.—At highway bridge, 1,500 feet northwest of Southern Pacific Co.'s station at Fair Oaks Bridge, and half a mile southeast of Fairoaks.

RECORDS AVAILABLE.—November 3, 1904, to September 30, 1913.

DRAINAGE AREA.—1,910 square miles.

GAGE.—Painted on right abutment of bridge near downstream end; vertical staff for low water. Position of gage has been changed several times since station was established, but no change has been made in datum.

CHANNEL.—Gravel and small bowlders; shifts slightly at high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ARTIFICIAL FLOW.—Low-water flow partially regulated by power plant at Folsom.

ACCURACY.—Rating curves fairly well defined; results good.

*Discharge measurements of American River at Fairoaks, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 2 | J. E. Stewart | 2.55 | 441 | June 10 | Lasley Lee | 4.69 | 3,300 |
| Feb. 18 | E. C. Murphy | 3.90 | 1,720 | 23 | E. C. Murphy | 3.63 | 1,520 |
| Apr. 8 | Lasley Lee | 5.21 | 4,480 | Aug. 13 | Charles Leidl | 1.84 | 260 |
| 10 | E. C. Murphy | 5.49 | 5,220 | 13 | do | 1.85 | 266 |
| 29 | Lasley Lee | 6.34 | 6,990 | Sept. 26 | R. C. Rice | 1.63 | 128 |
| May 3 | do | 5.30 | 4,640 | 26 | do | 1.52 | 104 |

*Daily gage height, in feet, of American River at Fairoaks, Cal., for the year ending Sept. 30, 1913.*

[O. C. Clark, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.00 | 2.55 | 2.90 | 2.80 | 3.7 | 3.2 | 5.3 | 5.2 | 5.6 | 2.80 | 2.50 | ..... |
| 2 | 2.00 | 2.50 | 2.80 | 2.80 | 3.8 | 3.2 | 5.5 | 5.2 | 5.4 | 2.80 | 2.40 | ..... |
| 3 | 2.00 | 2.40 | 2.80 | 2.80 | 3.8 | 3.2 | 5.6 | 5.1 | 5.0 | 2.80 | 2.30 | ..... |
| 4 | 2.00 | 2.30 | 2.60 | 3.0 | 3.6 | 3.2 | 5.3 | 5.3 | 4.9 | 2.80 | 2.20 | ..... |
| 5 | 2.00 | 3.5 | 2.60 | 3.0 | 3.5 | 3.3 | 5.6 | 5.8 | 5.0 | 2.80 | 2.20 | ..... |
| 6 | 2.00 | 5.8 | 2.55 | 2.90 | 3.5 | 3.45 | 5.9 | 7.0 | 4.9 | 2.80 | 2.00 | ..... |
| 7 | 2.00 | 6.8 | 2.50 | 2.80 | 3.5 | 3.55 | 5.4 | 7.2 | 4.9 | 2.70 | 2.00 | ..... |
| 8 | 2.00 | 5.9 | 2.50 | 2.70 | 3.5 | 3.9 | 5.3 | 7.0 | 4.6 | 2.60 | 1.80 | ..... |
| 9 | 2.00 | 4.2 | 2.50 | 2.90 | 3.5 | 4.0 | 5.4 | 7.0 | 4.6 | 2.50 | 1.80 | ..... |
| 10 | 2.00 | 4.5 | 2.40 | 3.2 | 3.5 | 4.1 | 5.5 | 7.9 | 4.6 | 2.40 | 1.80 | ..... |
| 11 | 2.00 | 4.1 | 2.40 | 2.90 | 3.5 | 4.2 | 6.0 | 6.6 | 4.5 | 2.30 | 1.80 | ..... |
| 12 | 2.00 | 3.7 | 2.40 | 2.80 | 3.5 | 4.1 | 6.4 | 6.3 | 4.5 | 2.40 | ..... | ..... |
| 13 | 2.00 | 3.55 | 2.20 | 2.90 | 3.5 | 4.0 | 6.7 | 5.7 | 4.4 | 2.50 | 1.85 | ..... |
| 14 | 2.00 | 3.45 | 2.20 | 3.3 | 3.5 | 3.9 | 6.2 | 5.6 | 4.3 | 2.40 | ..... | ..... |
| 15 | 2.00 | 3.2 | 2.20 | 4.1 | 3.5 | 3.8 | 5.6 | 6.0 | 4.3 | 2.45 | ..... | ..... |
| 16 | 2.00 | 3.0 | 3.0 | 4.8 | 3.7 | 3.5 | 5.4 | 6.2 | 4.2 | 2.40 | ..... | ..... |
| 17 | 2.00 | 3.0 | 3.7 | 4.7 | 3.9 | 3.5 | 5.4 | 6.6 | 4.1 | 2.20 | ..... | ..... |
| 18 | 2.00 | 3.0 | 3.7 | 5.8 | 3.9 | 3.8 | 5.5 | 7.5 | 4.0 | 2.10 | ..... | ..... |
| 19 | 2.00 | 3.0 | 3.5 | 5.8 | 3.8 | 4.0 | 5.5 | 7.6 | 4.0 | 2.00 | ..... | ..... |
| 20 | 2.00 | 3.0 | 3.2 | 4.6 | 3.7 | 4.0 | 5.3 | 6.5 | 3.8 | 2.00 | ..... | ..... |
| 21 | 2.00 | 3.0 | 3.1 | 4.2 | 3.55 | 3.8 | 5.5 | 6.5 | 3.8 | 2.00 | ..... | ..... |
| 22 | 2.00 | 3.0 | 3.0 | 4.0 | 3.5 | 4.1 | 6.0 | 6.5 | 3.6 | 2.00 | ..... | ..... |
| 23 | 2.50 | 3.0 | 3.0 | 4.0 | 3.5 | 4.3 | 6.3 | 6.8 | 3.6 | 1.90 | ..... | ..... |
| 24 | 2.30 | 3.0 | 2.80 | 3.7 | 3.5 | 4.4 | 6.4 | 7.0 | 3.6 | 2.20 | ..... | ..... |
| 25 | 2.20 | 2.90 | 2.80 | 3.6 | 3.5 | 4.3 | 6.4 | 6.6 | 3.6 | 3.0 | ..... | ..... |
| 26 | 2.30 | 2.70 | 2.80 | 3.6 | 3.5 | 4.0 | 7.2 | 6.6 | 3.5 | 2.40 | ..... | 1.60 |
| 27 | 2.30 | 2.60 | 2.80 | 3.6 | 3.4 | 4.0 | 7.7 | 6.2 | 3.4 | 2.50 | ..... | 1.50 |
| 28 | 2.40 | 2.80 | 2.80 | 3.8 | 3.3 | 4.0 | 6.6 | 5.9 | 3.4 | 2.80 | ..... | 1.50 |
| 29 | 2.40 | 2.80 | 2.80 | 3.7 | ..... | 4.3 | 6.2 | 6.0 | 3.2 | 3.45 | ..... | 1.55 |
| 30 | 2.50 | 2.90 | 2.70 | 3.55 | ..... | 4.4 | 5.7 | 5.8 | 3.0 | 3.3 | ..... | 1.65 |
| 31 | 2.60 | ..... | 2.60 | 3.5 | ..... | 4.8 | ..... | 5.6 | ..... | 3.0 | ..... | ..... |

*Daily discharge, in second-feet, of American River at Fairoaks, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 200 | 428 | 650 | 580 | 1,430 | 890 | 4,490 | 4,420 | 5,330 | 755 | 575 | ..... |
| 2 | 200 | 400 | 580 | 580 | 1,560 | 890 | 4,950 | 4,420 | 4,870 | 755 | 520 | ..... |
| 3 | 200 | 350 | 580 | 580 | 1,560 | 890 | 5,190 | 4,200 | 3,980 | 755 | 470 | ..... |
| 4 | 200 | 305 | 455 | 725 | 1,310 | 890 | 4,490 | 4,640 | 3,760 | 755 | 420 | ..... |
| 5 | 200 | 1,190 | 455 | 725 | 1,190 | 980 | 5,190 | 5,790 | 3,980 | 755 | 420 | ..... |
| 6 | 200 | 5,670 | 428 | 650 | 1,190 | 1,140 | 5,910 | 8,850 | 3,760 | 755 | 325 | ..... |
| 7 | 200 | 8,210 | 400 | 580 | 1,190 | 1,250 | 4,870 | 9,420 | 3,760 | 690 | 325 | ..... |
| 8 | 200 | 5,910 | 400 | 515 | 1,190 | 1,700 | 4,640 | 8,850 | 3,110 | 630 | 250 | ..... |
| 9 | 200 | 2,190 | 400 | 650 | 1,190 | 1,850 | 4,870 | 8,850 | 3,110 | 575 | 250 | ..... |
| 10 | 200 | 2,740 | 350 | 890 | 1,190 | 2,010 | 5,100 | 11,600 | 3,110 | 520 | 250 | ..... |
| 11 | 200 | 2,010 | 350 | 650 | 1,190 | 2,190 | 6,260 | 7,760 | 2,910 | 470 | 250 | ..... |
| 12 | 200 | 1,430 | 350 | 580 | 1,190 | 2,010 | 7,240 | 6,990 | 2,910 | 520 | 259 | ..... |
| 13 | 200 | 1,250 | 265 | 650 | 1,190 | 1,850 | 8,030 | 5,560 | 2,720 | 575 | 268 | ..... |
| 14 | 200 | 1,140 | 265 | 980 | 1,190 | 1,700 | 6,740 | 5,330 | 2,540 | 520 | ..... | ..... |
| 15 | 200 | 890 | 265 | 2,010 | 1,190 | 1,560 | 5,330 | 6,260 | 2,540 | 548 | ..... | ..... |
| 16 | 200 | 725 | 725 | 3,350 | 1,430 | 1,190 | 4,870 | 6,740 | 2,370 | 520 | ..... | ..... |
| 17 | 200 | 725 | 1,430 | 3,140 | 1,700 | 1,190 | 4,870 | 7,760 | 2,200 | 420 | ..... | ..... |
| 18 | 200 | 725 | 1,430 | 5,670 | 1,700 | 1,560 | 5,100 | 10,300 | 2,040 | 370 | ..... | ..... |
| 19 | 200 | 725 | 1,190 | 5,670 | 1,560 | 1,850 | 5,100 | 10,600 | 2,040 | 325 | ..... | ..... |
| 20 | 200 | 725 | 890 | 2,940 | 1,430 | 1,850 | 4,640 | 7,500 | 1,750 | 325 | ..... | ..... |
| 21 | 200 | 725 | 805 | 2,190 | 1,250 | 1,560 | 5,100 | 7,500 | 1,750 | 325 | ..... | ..... |
| 22 | 200 | 725 | 725 | 1,850 | 1,190 | 2,010 | 6,260 | 7,500 | 1,490 | 325 | ..... | ..... |
| 23 | 400 | 725 | 725 | 1,850 | 1,190 | 2,370 | 6,990 | 8,300 | 1,490 | 285 | ..... | ..... |
| 24 | 305 | 725 | 580 | 1,430 | 1,190 | 2,560 | 7,240 | 8,850 | 1,490 | 420 | ..... | ..... |
| 25 | 265 | 650 | 580 | 1,310 | 1,190 | 2,370 | 7,240 | 7,760 | 1,490 | 900 | ..... | ..... |
| 26 | 305 | 515 | 580 | 1,310 | 1,190 | 1,850 | 9,420 | 7,760 | 1,370 | 520 | ..... | 125 |
| 27 | 305 | 455 | 580 | 1,310 | 1,080 | 1,850 | 10,900 | 6,740 | 1,260 | 575 | ..... | 95 |
| 28 | 350 | 580 | 580 | 1,560 | 980 | 1,850 | 7,760 | 6,020 | 1,260 | 755 | ..... | 95 |
| 29 | 350 | 580 | 580 | 1,430 | ..... | 2,370 | 6,740 | 6,260 | 1,070 | 1,320 | ..... | 110 |
| 30 | 400 | 650 | 515 | 1,250 | ..... | 2,560 | 5,560 | 5,790 | 900 | 1,160 | ..... | 140 |
| 31 | 455 | ..... | 455 | 1,190 | ..... | 3,350 | ..... | 5,330 | ..... | 900 | ..... | ..... |

NOTE.—Discharge determined from two fairly well defined rating curves applicable Oct. 1, to Apr. 6, and Apr. 7 to Sept. 30. Discharge Aug. 12, interpolated. Estimated mean discharge Aug. 14–31, 232 second-feet; Sept. 1–25, 162 second-feet.

*Monthly discharge of American River at Fairoaks, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 455 | 200 | 243 | 14,900 | B. |
| November | 8,210 | 305 | 1,470 | 87,500 | A. |
| December | 1,430 | 265 | 599 | 36,800 | A. |
| January | 5,670 | 515 | 1,570 | 96,500 | A. |
| February | 1,700 | 980 | 1,290 | 71,600 | A. |
| March | 3,350 | 890 | 1,750 | 108,000 | A. |
| April | 10,900 | 4,490 | 6,040 | 359,000 | B. |
| May | 11,600 | 4,200 | 7,210 | 443,000 | A. |
| June | 5,330 | 900 | 2,550 | 152,000 | A. |
| July | 1,320 | 285 | 614 | 37,800 | A. |
| August | ..... | ..... | 283 | 17,400 | C. |
| September | ..... | ..... | 154 | 9,160 | C. |
| The year | 11,600 | ..... | 1,980 | 1,430,000 | |

### MIDDLE FORK OF AMERICAN RIVER NEAR EAST AUBURN, CAL.

LOCATION.—In the SE. ¼ sec. 6, T. 12 N., R. 9 E., at the Mountain quarry of the Pacific Portland Cement Co. Consolidated, about 1½ miles above the junction with North Fork and 3½ miles northeast of Auburn.

RECORDS AVAILABLE.—October 22, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in three sections on left bank at pump house.

CHANNEL.—Gravel and small bowlders; will probably shift at high stages.

DISCHARGE MEASUREMENTS.—Made from cable 300 feet below gage or by wading.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Middle Fork of American River near East Auburn, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 30 | J. E. Stewart | 2.23 | 236 | May 2 | Lasley Lee | 4.78 | 1,980 |
| Apr. 9 | E. C. Murphy | 4.89 | 2,080 | Aug. 30 | do | 1.67 | 97 |

*Daily gage height, in feet, of Middle Fork of American River near East Auburn, Cal., for the year ending Sept. 30, 1913.*

[H. M. Power, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 1.8 | 2.2 | 2.5 | 3.6 | 2.5 | 5.5 | 7.7 | 5.8 | 3.1 | 2.4 | 1.5 |
| 2 | 1.6 | 1.7 | 2.2 | 2.5 | 3.5 | 2.7 | 5.0 | 7.8 | 5.8 | 3.0 | 2.3 | 1.5 |
| 3 | 1.6 | 1.6 | 2.2 | 2.5 | 3.3 | 2.7 | 5.0 | 7.9 | 5.7 | 2.8 | 2.3 | 1.5 |
| 4 | 1.6 | 1.8 | 2.2 | 2.5 | 3.3 | 2.9 | 5.0 | 7.8 | 5.5 | 2.8 | 2.3 | 1.45 |
| 5 | 1.5 | 1.8 | 2.2 | 2.4 | 3.0 | 2.9 | 5.9 | 7.7 | 5.3 | 2.7 | 2.3 | 1.45 |
| 6 | 1.5 | 2.6 | 2.2 | 2.4 | 3.0 | 2.9 | 5.0 | 7.7 | 5.3 | 2.7 | 2.3 | 1.45 |
| 7 | 1.5 | 6.6 | 2.2 | 2.4 | 2.9 | 2.9 | 4.8 | 7.6 | 5.1 | 2.6 | 2.3 | 1.44 |
| 8 | 1.5 | 3.2 | 2.1 | 2.4 | 2.9 | 3.0 | 4.6 | 7.5 | 4.9 | 2.6 | 2.3 | 1.44 |
| 9 | 1.5 | 3.0 | 2.1 | 2.4 | 2.9 | 3.0 | 4.8 | 7.5 | 4.8 | 2.5 | 2.2 | 1.44 |
| 10 | 1.5 | 4.5 | 2.1 | 2.5 | 2.9 | 3.0 | 4.6 | 7.5 | 4.8 | 2.4 | 2.2 | 1.44 |
| 11 | 1.5 | 3.9 | 2.1 | 2.5 | 2.9 | 3.0 | 4.7 | 7.4 | 4.6 | 2.4 | 2.3 | 1.44 |
| 12 | 1.5 | 3.0 | 2.1 | 2.5 | 2.8 | 3.0 | 4.9 | 7.5 | 4.4 | 2.4 | 2.2 | 1.44 |
| 13 | 1.5 | 3.0 | 2.1 | 2.5 | 2.8 | 3.0 | 4.9 | 7.5 | 4.2 | 2.4 | 2.1 | 1.43 |
| 14 | 1.5 | 2.9 | 2.1 | 3.5 | 2.9 | 3.0 | 5.5 | 7.3 | 4.0 | 2.4 | 2.1 | 1.43 |
| 15 | 1.5 | 2.9 | 2.8 | 3.5 | 2.9 | 3.0 | 5.7 | 7.6 | 3.9 | 2.4 | 2.0 | 1.43 |
| 16 | 1.5 | 2.8 | 2.8 | 3.5 | 2.9 | 2.8 | 5.7 | 7.6 | 3.9 | 2.4 | 2.1 | 1.44 |
| 17 | 1.5 | 2.8 | 2.7 | 3.7 | 2.9 | 2.8 | 5.9 | 7.4 | 3.8 | 2.4 | 2.0 | 1.44 |
| 18 | ..... | 2.8 | 2.7 | 4.2 | 2.7 | 2.8 | 5.9 | 7.4 | 3.7 | 2.4 | 2.0 | 1.43 |
| 19 | ..... | 2.7 | 2.6 | 4.5 | 2.7 | 2.8 | 6.2 | 7.2 | 3.7 | 2.5 | 1.9 | 1.42 |
| 20 | ..... | 2.6 | 2.6 | 4.5 | 2.6 | 2.8 | 6.1 | 7.0 | 3.6 | 2.5 | 1.9 | 1.41 |
| 21 | ..... | 2.6 | 2.6 | 4.5 | 2.6 | 2.8 | 6.6 | 6.8 | 3.4 | 2.5 | 1.8 | 1.40 |
| 22 | ..... | 2.5 | 2.5 | 4.7 | 2.6 | 2.7 | 6.8 | 6.6 | 3.4 | 2.5 | 1.8 | 1.39 |
| 23 | 1.9 | 2.4 | 2.5 | 4.7 | 2.5 | 2.8 | 6.9 | 6.6 | 3.3 | 2.5 | 1.8 | 1.39 |
| 24 | 1.7 | 2.4 | 2.5 | 4.6 | 2.5 | 2.7 | 7.5 | 6.6 | 3.1 | 2.5 | 1.7 | 1.38 |
| 25 | 1.7 | 2.3 | 2.5 | 4.4 | 2.5 | 2.9 | 7.9 | 6.5 | 3.1 | 2.5 | 1.7 | 1.38 |
| 26 | 1.6 | 2.3 | 2.5 | 4.0 | 2.5 | 2.8 | 8.1 | 6.5 | 3.2 | 2.5 | 1.7 | 1.36 |
| 27 | 1.6 | 2.3 | 2.5 | 4.0 | 2.5 | 2.7 | 8.0 | 6.4 | 3.2 | 2.5 | 1.7 | 1.36 |
| 28 | 1.6 | 2.3 | 2.5 | 3.9 | 2.5 | 2.9 | 8.0 | 6.4 | 3.1 | 2.5 | 1.6 | 1.35 |
| 29 | 2.0 | 2.2 | 2.5 | 3.8 | ..... | 3.0 | 7.6 | 6.3 | 3.1 | 2.4 | 1.6 | 1.35 |
| 30 | 1.9 | 2.2 | 2.5 | 3.8 | ..... | 3.5 | 7.7 | 6.0 | 3.1 | 2.4 | 1.6 | 1.35 |
| 31 | 1.9 | ..... | 2.5 | 3.8 | ..... | 4.0 | ..... | 5.9 | ..... | 2.4 | 1.5 | ..... |

NOTE.—Oct. 18–22 water below lowest graduation of gage.

*Daily discharge in second-feet, of Middle Fork of American River, near East Auburn, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95 | 128 | 234 | 348 | 955 | 348 | 2,730 | 5,820 | 3,090 | 645 | 307 | 83 |
| 2 | 95 | 110 | 234 | 348 | 890 | 436 | 2,180 | 5,980 | 3,090 | 590 | 269 | 83 |
| 3 | 95 | 95 | 234 | 348 | 765 | 436 | 2,180 | 6,140 | 2,970 | 484 | 269 | 83 |
| 4 | 95 | 128 | 234 | 348 | 765 | 535 | 2,180 | 5,980 | 2,730 | 484 | 269 | 78 |
| 5 | 83 | 128 | 234 | 307 | 590 | 535 | 3,210 | 5,820 | 2,510 | 436 | 269 | 78 |
| 6 | 83 | 391 | 234 | 307 | 590 | 535 | 2,180 | 5,820 | 2,510 | 436 | 269 | 78 |
| 7 | 83 | 4,150 | 234 | 307 | 535 | 535 | 1,980 | 5,660 | 2,290 | 391 | 269 | 77 |
| 8 | 83 | 705 | 203 | 307 | 535 | 590 | 1,780 | 5,500 | 2,080 | 391 | 269 | 77 |
| 9 | 83 | 590 | 203 | 307 | 535 | 590 | 1,980 | 5,500 | 1,980 | 348 | 234 | 77 |
| 10 | 83 | 1,680 | 203 | 348 | 535 | 590 | 1,780 | 5,500 | 1,980 | 307 | 234 | 77 |
| 11 | 83 | 1,170 | 203 | 348 | 535 | 590 | 1,880 | 5,350 | 1,780 | 307 | 269 | 77 |
| 12 | 83 | 590 | 203 | 348 | 484 | 590 | 2,080 | 5,500 | 1,590 | 307 | 234 | 77 |
| 13 | 83 | 590 | 203 | 348 | 484 | 590 | 2,080 | 5,500 | 1,410 | 307 | 203 | 76 |
| 14 | 83 | 535 | 203 | 890 | 535 | 590 | 2,730 | 5,200 | 1,240 | 307 | 203 | 76 |
| 15 | 83 | 535 | 484 | 890 | 535 | 590 | 2,970 | 5,660 | 1,170 | 307 | 175 | 76 |
| 16 | 83 | 484 | 484 | 890 | 535 | 484 | 2,970 | 5,660 | 1,170 | 307 | 203 | 77 |
| 17 | 83 | 484 | 436 | 1,020 | 535 | 484 | 3,210 | 5,350 | 1,100 | 307 | 175 | 77 |
| 18 | 80 | 484 | 436 | 1,410 | 436 | 484 | 3,210 | 5,350 | 1,020 | 307 | 175 | 76 |
| 19 | 80 | 436 | 391 | 1,680 | 436 | 484 | 3,600 | 5,050 | 1,020 | 348 | 150 | 75 |
| 20 | 75 | 391 | 391 | 1,680 | 391 | 484 | 3,470 | 4,750 | 955 | 348 | 150 | 74 |
| 21 | 75 | 391 | 391 | 1,680 | 391 | 484 | 4,150 | 4,450 | 825 | 348 | 128 | 73 |
| 22 | 75 | 348 | 348 | 1,880 | 391 | 436 | 4,450 | 4,150 | 825 | 348 | 128 | 72 |
| 23 | 150 | 307 | 348 | 1,880 | 348 | 484 | 4,600 | 4,150 | 765 | 348 | 128 | 72 |
| 24 | 110 | 307 | 348 | 1,780 | 348 | 436 | 5,500 | 4,150 | 645 | 348 | 110 | 72 |
| 25 | 110 | 269 | 348 | 1,590 | 348 | 535 | 6,140 | 4,010 | 645 | 348 | 110 | 72 |
| 26 | 95 | 269 | 348 | 1,240 | 348 | 484 | 6,460 | 4,010 | 705 | 348 | 110 | 70 |
| 27 | 95 | 269 | 348 | 1,240 | 348 | 436 | 6,300 | 3,870 | 705 | 348 | 110 | 70 |
| 28 | 95 | 269 | 348 | 1,170 | 348 | 535 | 6,300 | 3,870 | 645 | 348 | 95 | 70 |
| 29 | 125 | 234 | 348 | 1,100 | ..... | 590 | 5,660 | 3,730 | 645 | 307 | 95 | 70 |
| 30 | 150 | 234 | 348 | 1,100 | ..... | 890 | 5,820 | 3,340 | 645 | 307 | 95 | 70 |
| 31 | 150 | ..... | 348 | 1,100 | ..... | 1,240 | ..... | 3,210 | ..... | 307 | 83 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Oct. 18–22 discharge estimated and compared with that of Rubicon River near Quintette, Cal.

*Monthly discharge of Middle Fork of American River near East Auburn, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 175 | a 75 | 95.9 | 5,900 | B. |
| November | 4,150 | 95 | 557 | 33,100 | A. |
| December | 484 | 203 | 308 | 18,900 | A. |
| January | 1,880 | 307 | 921 | 56,600 | A. |
| February | 955 | 348 | 517 | 28,700 | A. |
| March | 1,240 | 348 | 550 | 33,800 | A. |
| April | 6,460 | 1,780 | 3,530 | 210,000 | A. |
| May | 6,140 | 3,210 | 4,970 | 306,000 | A. |
| June | 3,090 | 645 | 1,490 | 88,700 | A. |
| July | 645 | 307 | 367 | 22,600 | A. |
| August | 307 | 83 | 187 | 11,500 | B. |
| September | 83 | 70 | 75.4 | 4,490 | C. |
| The year | 6,460 | 70 | 1,130 | 820,000 | |

a Estimated.

### RUBICON RIVER AT RUBICON SPRINGS, CAL.

LOCATION.—In the SE. ¼ sec. 31, T. 14 N., R. 16 E., at Rubicon Springs, about three-fourths mile above mouth of Millers Creek.

RECORDS AVAILABLE.—February 1, 1910, to September 30, 1913.

DRAINAGE AREA.—31.6 square miles.

GAGE.—Water-stage recorder.

CHANNEL.—Sand and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable.

WINTER FLOW.—Discharge relation affected by ice.

COOPERATION.—Records of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet, of Rubicon River at Rubicon Springs, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 4 | 10 | 11 | 7 | 16 | 26 | 257 | 91 | 410 | 91 | 55 | 10 |
| 2 | 1 | 6 | 8 | 10 | 7 | 28 | 25 | 160 | 119 | 367 | 105 | 48 | 8 |
| 3 | 1 | 5 | 8 | 10 | 7 | 28 | 26 | 100 | 205 | 410 | 121 | 45 | 8 |
| 4 | 3 | 5 | 9 | 10 | 7 | 28 | 33 | 100 | 353 | 398 | 119 | 40 | 7 |
| 5 | 3 | 5 | 9 | 10 | 7 | 30 | 38 | 136 | 477 | 340 | 100 | 35 | 6 |
| 6 | 16 | 4 | 309 | 17 | 10 | 30 | 45 | 83 | 531 | 513 | 110 | 32 | 6 |
| 7 | 120 | 4 | 226 | 11 | 13 | 30 | 50 | 64 | 538 | 412 | 105 | 29 | 6 |
| 8 | 45 | 4 | 128 | 9 | 13 | 30 | 50 | 63 | 420 | 303 | 95 | 29 | 6 |
| 9 | 35 | 3 | 112 | 8 | 13 | 30 | 50 | 95 | 578 | 235 | 85 | 29 | 4 |
| 10 | 31 | 3 | 100 | 8 | 13 | 30 | 55 | 168 | 401 | 197 | 74 | 29 | 3 |
| 11 | 26 | 3 | 70 | 8 | 13 | 29 | 75 | 217 | 303 | 180 | 65 | 21 | 3 |
| 12 | 26 | 3 | 58 | 8 | 13 | 29 | 64 | 231 | 285 | 232 | 45 | 17 | 3 |
| 13 | 22 | 3 | 50 | 7 | 13 | 29 | 55 | 180 | 265 | 269 | 40 | 17 | 3 |
| 14 | 19 | 3 | 45 | 7 | 13 | 29 | 50 | 112 | 328 | 262 | 35 | 16 | 3 |
| 15 | 19 | 3 | 35 | 9 | 13 | 40 | 45 | 73 | 369 | 234 | 31 | 16 | 3 |
| 16 | 16 | 3 | 31 | 13 | 13 | 45 | 45 | 70 | 484 | 205 | 26 | 16 | 3 |
| 17 | 16 | 3 | 31 | 13 | 13 | 45 | 45 | 70 | 511 | 190 | 26 | 16 | 3 |
| 18 | 10 | 3 | 31 | 13 | 13 | 45 | 42 | 75 | 812 | 172 | 26 | 16 | 2 |
| 19 | 10 | 3 | 31 | 13 | 13 | 44 | 41 | 70 | 358 | 152 | 26 | 16 | 2 |
| 20 | 10 | 2 | 31 | 13 | 13 | 38 | 39 | 122 | 358 | 133 | 26 | 15 | 2 |
| 21 | 6 | 2 | 22 | 13 | 13 | 37 | 39 | 226 | 463 | 134 | 26 | 15 | 2 |
| 22 | 6 | 1 | 19 | 13 | 13 | 34 | 74 | 276 | 556 | 140 | 26 | 14 | 2 |
| 23 | 6 | 2 | 22 | 13 | 13 | 32 | 48 | 281 | 573 | 192 | 115 | 14 | 2 |
| 24 | 6 | 3 | 28 | 13 | 13 | 32 | 34 | 318 | 581 | 160 | 80 | 14 | 2 |
| 25 | 5 | 3 | 25 | 13 | 14 | 32 | 32 | 392 | 558 | 126 | 110 | 13 | 2 |
| 26 | 5 | 3 | 24 | 13 | 20 | 31 | 31 | 505 | 566 | 113 | 111 | 13 | 2 |
| 27 | 5 | 3 | 26 | 13 | 23 | 30 | 29 | 399 | 506 | 98 | 170 | 13 | 2 |
| 28 | 5 | 3 | 27 | 13 | 23 | 26 | 29 | 265 | 392 | 74 | 168 | 10 | 2 |
| 29 | 4 | 6 | 23 | 13 | 23 | ..... | 35 | 196 | 369 | 74 | 120 | 10 | 2 |
| 30 | 4 | 13 | 22 | 13 | 25 | ..... | 103 | 120 | 477 | 88 | 75 | 10 | 2 |
| 31 | ..... | 10 | ..... | 13 | 25 | ..... | 176 | ..... | 526 | ..... | 60 | 10 | ..... |

*Monthly discharge of Rubicon River at Rubicon Springs, Cal., for the period Sept. 1, 1912 to Sept. 30, 1913.*

[Drainage area, 31.6 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | |
|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. |
| 1912. | | | | | | |
| September | 120 | 1 | 16.1 | 0.51 | 0.57 | 958 |
| 1912-13. | | | | | | |
| October | 13 | 1 | 3.9 | 0.123 | 0.14 | 240 |
| November | 309 | 8 | 52.3 | 1.66 | 1.85 | 3,110 |
| December | 17 | 7 | 11.3 | .358 | .41 | 695 |
| January | 25 | 7 | 13.9 | .440 | .51 | 855 |
| February | 45 | 16 | 32.4 | 1.03 | 1.07 | 1,800 |
| March | 176 | 25 | 49.3 | 1.56 | 1.80 | 3,030 |
| April | 505 | 63 | 181 | 5.73 | 6.39 | 10,800 |
| May | 812 | 91 | 431 | 13.6 | 15.68 | 26,500 |
| June | 513 | 74 | 227 | 7.18 | 8.01 | 13,500 |
| July | 170 | 26 | 77.8 | 2.46 | 2.84 | 4,780 |
| August | 55 | 10 | 21.7 | .687 | .79 | 1,330 |
| September | 10 | 2 | 3.7 | .117 | .13 | 220 |
| The year | 812 | 1 | 92.3 | 2.92 | 39.62 | 66,900 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### RUBICON RIVER NEAR QUINTETTE, CAL.

LOCATION.—In the NW. ¼ SW. ¼ sec. 24, T. 13 N., R. 13 E., about 1 mile below mouth of Little South Fork of Rubicon River, half a mile above trail crossing to Ellicott, and 11½ miles northeast of Quintette.

RECORDS AVAILABLE.—November 21, 1909, to September 30, 1913.

DRAINAGE AREA.—198 square miles.

CHANNEL.—In solid rock.

DISCHARGE MEASUREMENTS.—Made from cable.

COOPERATION.—Records of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet, of Rubicon River near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15 | 24 | 35 | 152 | 75 | 112 | 171 | 1,125 | 775 | 1,525 | 298 | 150 | 35 |
| 2 | 15 | 20 | 35 | 152 | 95 | 182 | 171 | 920 | 735 | 1,350 | 293 | 143 | 35 |
| 3 | 16 | 20 | 35 | 152 | 95 | 190 | 184 | 658 | 1,030 | 1,410 | 290 | 130 | 35 |
| 4 | 19 | 20 | 35 | 143 | 95 | 192 | 210 | 678 | 1,705 | 1,390 | 336 | 118 | 31 |
| 5 | 20 | 20 | 35 | 118 | 75 | 190 | 243 | 1,065 | 2,215 | 1,290 | 298 | 104 | 27 |
| 6 | 35 | 20 | 1,490 | 102 | 88 | 190 | 296 | 735 | 2,325 | 1,605 | 271 | 95 | 27 |
| 7 | 248 | 20 | 895 | 102 | 88 | 192 | 334 | 638 | 2,415 | 1,430 | 271 | 85 | 27 |
| 8 | 241 | 20 | 558 | 102 | 88 | 190 | 336 | 613 | 2,085 | 1,075 | 250 | 81 | 26 |
| 9 | 200 | 20 | 462 | 101 | 88 | 188 | 409 | 757 | 2,850 | 875 | 243 | 75 | 24 |
| 10 | 180 | 20 | 462 | 100 | 88 | 190 | 457 | 975 | 2,080 | 750 | 220 | 68 | 22 |
| 11 | 126 | 20 | 461 | 98 | 88 | 184 | 472 | 1,277 | 1,720 | 675 | 200 | 77 | 20 |
| 12 | 118 | 18 | 435 | 98 | 87 | 184 | 404 | 1,370 | 1,522 | 690 | 180 | 74 | 20 |
| 13 | 105 | 17 | 391 | 95 | 85 | 184 | 367 | 1,297 | 1,400 | 735 | 171 | 71 | 20 |
| 14 | 100 | 15 | 346 | 85 | 85 | 180 | 338 | 885 | 1,555 | 725 | 161 | 56 | 20 |
| 15 | 87 | 15 | 322 | 85 | 88 | 258 | 322 | 695 | 1,770 | 670 | 143 | 50 | 16 |
| 16 | 81 | 15 | 310 | 92 | 85 | 296 | 310 | 665 | 2,050 | 600 | 131 | 47 | 12 |
| 17 | 80 | 15 | 303 | 92 | 84 | 298 | 310 | 767 | 2,085 | 530 | 125 | 45 | 12 |
| 18 | 77 | 15 | 263 | 93 | 85 | 298 | 310 | 815 | 3,665 | 500 | 118 | 45 | 11 |
| 19 | 68 | 15 | 227 | 103 | 85 | 275 | 305 | 670 | 2,000 | 459 | 110 | 40 | 11 |
| 20 | 45 | 15 | 220 | 124 | 84 | 241 | 310 | 820 | 1,865 | 417 | 110 | 35 | 11 |
| 21 | 45 | 15 | 220 | 118 | 84 | 237 | 312 | 1,215 | 2,050 | 394 | 110 | 35 | 10 |
| 22 | 40 | 15 | 227 | 102 | 84 | 216 | 310 | 1,490 | 2,240 | 396 | 110 | 35 | 10 |
| 23 | 40 | 15 | 227 | 110 | 84 | 202 | 298 | 1,530 | 2,265 | 430 | 135 | 33 | 11 |
| 24 | 40 | 15 | 210 | 107 | 82 | 200 | 281 | 1,660 | 2,175 | 449 | 247 | 31 | 11 |
| 25 | 31 | 15 | 200 | 107 | 88 | 200 | 265 | 1,960 | 2,065 | 399 | 220 | 35 | 11 |
| 26 | 31 | 15 | 200 | 102 | 126 | 196 | 248 | 2,325 | 2,050 | 372 | 245 | 37 | 11 |
| 27 | 31 | 15 | 170 | 92 | 151 | 190 | 245 | 2,040 | 1,865 | 368 | 241 | 36 | 11 |
| 28 | 31 | 20 | 152 | 88 | 151 | 165 | 265 | 1,510 | 1,815 | 330 | 449 | 50 | 11 |
| 29 | 31 | 20 | 143 | 88 | 151 | ..... | 293 | 1,245 | 1,470 | 310 | 310 | 35 | 11 |
| 30 | 24 | 27 | 126 | 90 | 161 | ..... | 495 | 930 | 1,620 | 286 | 224 | 35 | 11 |
| 31 | ..... | 35 | ..... | 68 | 161 | ..... | 816 | ..... | 1,785 | ..... | 175 | 35 | ..... |

NOTE.—To obtain the natural run-off the discharge of Little South Fork ditch must be added.

*Monthly discharge of Rubicon River near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1912. | | | | |
| September | 248 | 15 | 74.0 | 4,400 |
| 1912–13. | | | | |
| October | 35 | 15 | 18.4 | 1,130 |
| November | 1,490 | 35 | 306 | 18,200 |
| December | 152 | 68 | 105 | 6,460 |
| January | 161 | 75 | 98.5 | 6,060 |
| February | 298 | 112 | 208 | 11,600 |
| March | 816 | 171 | 325 | 20,000 |
| April | 2,320 | 613 | 1,110 | 66,000 |
| May | 3,660 | 735 | 1,910 | 117,000 |
| June | 1,600 | 286 | 748 | 44,500 |
| July | 449 | 110 | 216 | 13,300 |
| August | 150 | 31 | 64.1 | 3,940 |
| September | 35 | 10 | 18.3 | 1,090 |
| The year | 3,660 | 10 | 428 | 309,000 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey. See footnote to table of daily discharge.

### LITTLE SOUTH FORK OF RUBICON RIVER AT SAWMILL NEAR QUINTETTE, CAL.

LOCATION.—In the NW. ¼ NW. ¼ sec. 24, T. 13 N., R. 14 E., at South Fork sawmill, about half a mile above the mouth of Gerle Creek, and 15 miles northeast of Quintette.

RECORDS AVAILABLE.—February 1, 1910, to September 30, 1913.

DRAINAGE AREA.—16.6 square miles.

GAGE.—Staff.

CHANNEL.—Compact gravel.

DISCHARGE MEASUREMENTS.—Made from cable.

WINTER FLOW.—Discharge relation affected by ice.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet, of Little South Fork Rubicon River at sawmill near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 2 | 10 | 6 | 9 | 14 | 81 | 66 | 81 | 15 | 3.5 | 2 |
| 2 | 1 | 2 | 2 | 13 | 8 | 15 | 14 | 58 | 66 | 88 | 16 | 3.5 | 2 |
| 3 | 2 | 2 | 2 | 18 | 8 | 16 | 15 | 50 | 123 | 96 | 16 | 2.5 | 2 |
| 4 | 1 | 2 | 2 | 12 | 8 | 16 | 18 | 62 | 165 | 105 | 17 | 2.5 | 2 |
| 5 | 1 | 2 | 2 | 15 | 6 | 16 | 20 | 74 | 217 | 123 | 15 | 2.5 | 2 |
| 6 | 2 | 1 | 133 | 7 | 7 | 16 | 25 | 56 | 226 | 133 | 15 | 2.5 | 2 |
| 7 | 22 | 1 | 133 | 8 | 7 | 16 | 28 | 50 | 234 | 88 | 12 | 2.5 | 2 |
| 8 | 15 | 1 | 133 | 10 | 8 | 16 | 28 | 56 | 186 | 68 | 12 | 2.5 | 2 |
| 9 | 15 | 1 | 50 | 10 | 8 | 16 | 34 | 73 | 320 | 64 | 10 | 2.5 | 2 |
| 10 | 12 | 1 | 48 | 10 | 8 | 16 | 35 | 97 | 186 | 50 | 10 | 2.5 | 2 |
| 11 | 10 | 1 | 22 | 10 | 8 | 16 | 35 | 119 | 144 | 45 | 8 | 2.5 | 2 |
| 12 | 2 | 1 | 19 | 10 | 8 | 16 | 28 | 128 | 123 | 45 | 7 | 2.5 | 2 |
| 13 | 2 | 1 | 18 | 10 | 7 | 16 | 26 | 110 | 120 | 45 | 6 | 2.5 | 2 |
| 14 | 2 | 2 | 16 | 10 | 7 | 15 | 24 | 68 | 144 | 45 | 9 | 2.5 | 2 |
| 15 | 2 | 2 | 15 | 10 | 8 | 22 | 22 | 56 | 154 | 40 | 7 | 2.5 | 1 |
| 16 | 2 | 2 | 15 | 8 | 7 | 25 | 22 | 56 | 181 | 35 | 7 | 2.5 | 1 |
| 17 | 1 | 2 | 15 | 8 | 7 | 25 | 22 | 68 | 196 | 30 | 5 | 2.5 | 1 |
| 18 | 1 | 2 | 14 | 8 | 7 | 25 | 22 | 64 | 364 | 30 | 3.5 | 2 | 1 |
| 19 | 1 | 2 | 12 | 9 | 7 | 23 | 22 | 62 | 175 | 26 | 5 | 2 | 1 |
| 20 | 1 | 2 | 12 | 11 | 7 | 20 | 22 | 81 | 160 | 26 | 3.5 | 2 | 1 |
| 21 | 1 | 2 | 12 | 10 | 7 | 20 | 18 | 114 | 170 | 26 | 3.5 | 2 | 1 |
| 22 | 2 | 2 | 12 | 9 | 7 | 18 | 26 | 150 | 186 | 24 | 3.5 | 2 | 1 |
| 23 | 2 | 2 | 12 | 10 | 7 | 17 | 30 | 154 | 170 | 26 | 11 | 2 | 1 |
| 24 | 2 | 2 | 10 | 9 | 7 | 17 | 30 | 175 | 165 | 26 | 12 | 2.5 | 1 |
| 25 | 2 | 2 | 10 | 9 | 8 | 17 | 26 | 215 | 144 | 28 | 12 | 2.5 | 1 |
| 26 | 1 | 2 | 10 | 9 | 12 | 16 | 26 | 261 | 133 | 26 | 10 | 2.5 | 1 |
| 27 | 1 | 2 | 10 | 8 | 13 | 16 | 18 | 209 | 117 | 26 | 7 | 2.5 | 1 |
| 28 | 1 | 5 | 10 | 7 | 13 | 14 | 19 | 140 | 125 | 26 | 7 | 2.2 | 1 |
| 29 | 1 | 5 | 10 | 7 | 13 | ..... | 22 | 105 | 110 | 26 | 10 | 2.2 | 1 |
| 30 | 1 | 2 | 10 | 7 | 14 | ..... | 42 | 75 | 114 | 23 | 5 | 2.2 | 1 |
| 31 | ..... | 2 | ..... | 6 | 14 | ..... | 64 | ..... | 103 | ..... | 3.5 | 2.2 | ..... |

*Monthly discharge of Little South Fork of Rubicon River near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

[Drainage area, 16.6 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | |
|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. |
| 1912. | | | | | | |
| September | 22 | 1 | 3.7 | 0.223 | 0.25 | 220 |
| 1912–13. | | | | | | |
| October | 5 | 1 | 1.9 | 0.114 | 0.13 | 117 |
| November | 133 | 2 | 25.7 | 1.55 | 1.73 | 1,530 |
| December | 18 | 6 | 9.6 | .578 | .67 | 590 |
| January | 14 | 6 | 8.5 | .512 | .59 | 523 |
| February | 25 | 9 | 17.5 | 1.05 | 1.09 | 972 |
| March | 64 | 14 | 25.7 | 1.55 | 1.79 | 1,580 |
| April | 261 | 50 | 102 | 6.14 | 6.85 | 6,070 |
| May | 364 | 66 | 164 | 9.88 | 11.39 | 10,100 |
| June | 133 | 23 | 50.7 | 3.05 | 3.40 | 3,020 |
| July | 17 | 3.5 | 9.15 | .551 | .64 | 563 |
| August | 3.5 | 2 | 2.43 | .146 | .17 | 149 |
| September | 2 | 1 | 1.5 | .090 | .10 | 89 |
| The year | 364 | 1 | 34.9 | 2.10 | 28.55 | 25,300 |

NOTE.—Monthly and yearly discharge computed by engineers of the United States Geological Survey.

**LITTLE SOUTH FORK OF RUBICON RIVER BELOW GERLE CREEK, NEAR QUINTETTE, CAL.**

LOCATION.—In the SE. ¼ SE. ¼ sec. 21, T. 13 N., R. 14 E., one-fourth mile below Gerle Creek, 1 mile below South Fork sawmill, and 15 miles northeast of Quintette.

RECORDS AVAILABLE.—February 1, 1910, to September 30, 1913.

DRAINAGE AREA.—49.6 square miles.

GAGE.—Staff.

CHANNEL.—Gravel and bowlders; practically permanent.

DISCHARGE MEASUREMENTS.—Made from cable.

DIVERSIONS.—Water is diverted from Gerle Creek about 1¾ miles above the mouth and discharges into Pilot Creek above Uncle Tom's Cabin.

WINTER FLOW.—Discharge relation affected by ice.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet, of Little South Fork of Rubicon River below Gerle Creek Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 5 | 4 | 20 | 6 | 49 | 33 | 175 | 183 | 182 | 16 | 7 | 4 |
| 2 | 4 | 5 | 4 | 18 | 5 | 46 | 33 | 155 | 205 | 196 | 15 | 7 | 4 |
| 3 | 6 | 5 | 4 | 18 | 6 | 46 | 36 | 128 | 312 | 197 | 16 | 6 | 4 |
| 4 | 6 | 5 | 3 | 17 | 7 | 42 | 45 | 221 | 477 | 196 | 18 | 6 | 4 |
| 5 | 6 | 4 | 6 | 15 | 10 | 40 | 74 | 190 | 575 | 211 | 14 | 6 | 4 |
| 6 | 6 | 4 | 370 | 13 | 11 | 39 | 74 | 152 | 575 | 262 | 13 | 7 | 4 |
| 7 | 7 | 4 | 108 | 12 | 12 | 38 | 84 | 144 | 575 | 190 | 11 | 6 | 4 |
| 8 | 6 | 4 | 55 | 12 | 13 | 39 | 95 | 162 | 505 | 150 | 11 | 6 | 4 |
| 9 | 6 | 4 | 52 | 11 | 13 | 40 | 109 | 211 | 770 | 145 | 10 | 6 | 4 |
| 10 | 6 | 4 | 90 | 11 | 12 | 42 | 122 | 287 | 540 | 120 | 9 | 6 | 4 |
| 11 | 6 | 4 | 128 | 11 | 10 | 45 | 118 | 337 | 464 | 103 | 8 | 6 | 4 |
| 12 | 6 | 4 | 120 | 11 | 10 | 48 | 81 | 345 | 420 | 96 | 9 | 6 | 4 |
| 13 | 5 | 4 | 113 | 10 | 10 | 48 | 69 | 302 | 390 | 85 | 9 | 6 | 4 |
| 14 | 5 | 4 | 110 | 10 | 12 | 50 | 58 | 187 | 415 | 79 | 7 | 6 | 4 |
| 15 | 5 | 4 | 96 | 11 | 10 | 60 | 56 | 148 | 435 | 68 | 7 | 6 | 4 |
| 16 | 5 | 4 | 71 | 14 | 10 | 74 | 69 | 153 | 470 | 56 | 7 | 6 | 4 |
| 17 | 5 | 4 | 65 | 20 | 8 | 74 | 79 | 203 | 450 | 50 | 7 | 5 | 4 |
| 18 | 5 | 4 | 54 | 24 | 9 | 69 | 56 | 201 | 870 | 46 | 7 | 4 | 4 |
| 19 | 5 | 4 | 52 | 17 | 9 | 56 | 52 | 173 | 520 | 40 | 8 | 4 | 4 |
| 20 | 5 | 4 | 45 | 16 | 10 | 46 | 50 | 255 | 485 | 36 | 7 | 4 | 4 |
| 21 | 5 | 4 | 45 | 18 | 10 | 45 | 48 | 359 | 470 | 31 | 6 | 4 | 4 |
| 22 | 5 | 4 | 45 | 20 | 9 | 45 | 45 | 419 | 470 | 31 | 7 | 4 | 4 |
| 23 | 5 | 5 | 40 | 14 | 9 | 42 | 43 | 419 | 440 | 39 | 17 | 4 | 4 |
| 24 | 5 | 5 | 36 | 14 | 14 | 40 | 42 | 461 | 410 | 36 | 16 | 4 | 4 |
| 25 | 5 | 4 | 29 | 12 | 14 | 38 | 45 | 540 | 380 | 30 | 18 | 4 | 4 |
| 26 | 5 | 4 | 28 | 12 | 22 | 33 | 48 | 610 | 330 | 28 | 15 | 4 | 4 |
| 27 | 5 | 5 | 27 | 5 | 24 | 34 | 53 | 487 | 295 | 34 | 13 | 4 | 4 |
| 28 | 5 | 8 | 24 | 5 | 27 | 39 | 80 | 365 | 355 | 27 | 13 | 4 | 4 |
| 29 | 5 | 4 | 21 | 4 | 28 | ..... | 159 | 287 | 285 | 20 | 13 | 4 | 4 |
| 30 | 5 | 4 | 21 | 5 | 35 | ..... | 227 | 205 | 245 | 16 | 9 | 4 | 4 |
| 31 | ..... | 4 | ..... | 6 | 45 | ..... | 221 | ..... | 220 | ..... | 8 | 4 | ..... |

NOTE.—Daily discharge Sept. 19 and 20, 1911, interpolated by United States Geological Survey.

*Monthly discharge of Little South Fork of Rubicon River below Gerle Creek, near Quintette, Cal., for the period Sept. 1, 1912, to Sept 30, 1913.*

[Drainage area, 49.6 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | |
|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. |
| 1912. | | | | | | |
| September | 7 | 4 | 5.3 | 0.107 | 0.12 | 315 |
| 1912–13. | | | | | | |
| October | 8 | 4 | 4.4 | 0.089 | 0.10 | 270 |
| November | 370 | 3 | 62.2 | 1.25 | 1.40 | 3,700 |
| December | 24 | 4 | 13.1 | .264 | .30 | 806 |
| January | 45 | 5 | 13.9 | .280 | .32 | 855 |
| February | 74 | 33 | 46.7 | .942 | .98 | 2,590 |
| March | 227 | 33 | 77.5 | 1.56 | 1.80 | 4,770 |
| April | 610 | 128 | 276 | 5.56 | 6.20 | 16,400 |
| May | 870 | 183 | 437 | 8.81 | 10.16 | 26,900 |
| June | 262 | 16 | 93.3 | 1.88 | 2.10 | 5,550 |
| July | 18 | 6 | 11.1 | .224 | .26 | 682 |
| August | 7 | 4 | 5.2 | .105 | .12 | 320 |
| September | 4 | 4 | 4.0 | .081 | .09 | 238 |
| The year | 870 | 3 | 87.1 | 1.76 | 23.83 | 63,100 |

NOTE.—Monthly and yearly discharge computed by engineers of the U. S. Geological Survey.

### LITTLE SOUTH FORK OF RUBICON RIVER AT MOUTH, NEAR QUINTETTE, CAL.

LOCATION.—In the SE. ¼ sec. 13, T. 13 N., R. 13 E., about one-fourth mile above mouth and 13 miles northeast of Quintette.

RECORDS AVAILABLE.—November 29, 1909, to December 7, 1911, when station was discontinued.

DRAINAGE AREA.—57.8 square miles.

GAGE.—Staff.

CHANNEL.—Bowlders and coarse gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from cable.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet, of Little South Fork of Rubicon River at mouth, near Quintette, Cal., for the period July 1 to Dec. 7, 1911.*

| Day. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Day. | July. | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 182 | 52 | 40 | 10 | 16 | 40 | 16 | 103 | 37 | 16 | 10 | 31 | ..... |
| 2 | 182 | 52 | 31 | 10 | 16 | 40 | 17 | 90 | 37 | 16 | 10 | 31 | ..... |
| 3 | 168 | 52 | 31 | 10 | 16 | 40 | 18 | 90 | 37 | 10 | 10 | 23 | ..... |
| 4 | 168 | 52 | 23 | 10 | 16 | 40 | 19 | 77 | 46 | 10 | 10 | 23 | ..... |
| 5 | 155 | 52 | 23 | 10 | 16 | 40 | 20 | 77 | 37 | 10 | 10 | 23 | ..... |
| 6 | 155 | 52 | 23 | 10 | 16 | 113 | 21 | 65 | 37 | 10 | 16 | 23 | ..... |
| 7 | 142 | 37 | 23 | 10 | 16 | 86 | 22 | 65 | 37 | 10 | 16 | 23 | ..... |
| 8 | 142 | 29 | 23 | 10 | 16 | ..... | 23 | 52 | 37 | 10 | 16 | 23 | ..... |
| 9 | 142 | 29 | 23 | 10 | 16 | ..... | 24 | 52 | 37 | 10 | 10 | 23 | ..... |
| 10 | 128 | 37 | 23 | 10 | 50 | ..... | 25 | 65 | 37 | 10 | 16 | 23 | ..... |
| 11 | 128 | 37 | 23 | 10 | 23 | ..... | 26 | 52 | 37 | 10 | 23 | 23 | ..... |
| 12 | 116 | 37 | 23 | 10 | 23 | ..... | 27 | 52 | 37 | 10 | 23 | 23 | ..... |
| 13 | 116 | 37 | 23 | 10 | 23 | ..... | 28 | 52 | 37 | 10 | 23 | 31 | ..... |
| 14 | 116 | 37 | 23 | 10 | 23 | ..... | 29 | 52 | 37 | 10 | 23 | 50 | ..... |
| 15 | 103 | 37 | 23 | 10 | 31 | ..... | 30 | 52 | 37 | 10 | 16 | 40 | ..... |
| | | | | | | | 31 | 52 | 37 | ..... | 16 | ..... | ..... |

*Monthly discharge of Little South Fork of Rubicon River at mouth, near Quintette, Cal., for the period July 1 to Dec. 7, 1911.*

[Drainage area, 57.8 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | |
|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. |
| July | 182 | 52 | 103 | 1.78 | 2.05 | 6,330 |
| August | 52 | 29 | 39.7 | .687 | .79 | 2,440 |
| September | 40 | 10 | 18.0 | .311 | .35 | 1,070 |
| October | 23 | 10 | 12.8 | .221 | .25 | 787 |
| November | 50 | 16 | 24.3 | .420 | .47 | 1,450 |
| December 1–7 | 113 | 40 | 57.0 | .986 | .26 | 791 |
| The period | ..... | ..... | ..... | ..... | ..... | 12,900 |

NOTE.—Monthly discharge computed by engineers of the U. S. Geological Survey.

### LITTLE SOUTH FORK DITCH AT SAWMILL, NEAR QUINTETTE, CAL.

LOCATION.—At flume across Little South Fork of Rubicon River, about half a mile above sawmill and 15 miles northeast of Quintette.

RECORDS AVAILABLE.—June 7, 1910, to September 30, 1913.

GAGE.—Staff.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

The intake of this canal is on Gerlé Creek, about 1¾ miles above the mouth. The course of the ditch is south until it crosses the Little Rubicon; then down the valley to a point in the main Rubicon canyon, from which the ditch is carried by a tunnel into the Pilot Creek drainage area; total length, about 10 miles.

The ditch is used from June to November for conveying the stored water from Loon Lake to Pilot Creek, where it is diverted for irrigation on Georgetown divide.

The ditch serves as a reservoir supply to Pilot Creek and is used only when Pilot Creek flow is not sufficient to supply the demand.

*Daily discharge, in second-feet, of Little South Fork ditch at sawmill near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | June. | July. | Aug. | Sept. | Day. | Sept. | Oct. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 18 | ..... | 11 | 21.4 | 18.5 | 16 | 21 | 18 | 9 | 18 | 21.4 | 17.1 |
| 2 | 22 | 18 | ..... | 11 | 20 | 18.5 | 17 | 21 | 16 | 9 | 21 | 21.4 | 17.1 |
| 3 | 24 | 18 | ..... | 11 | 20 | 18.5 | 18 | 21 | 16 | 10 | 21 | 21.4 | 17.1 |
| 4 | 23 | 18 | ..... | 11 | 20 | 18.5 | 19 | 21 | 16 | 10 | 19 | 21.4 | 17.1 |
| 5 | 23 | 18 | ..... | 9 | 18.5 | 18.5 | 20 | 20 | 16 | 10 | 21 | 21.4 | 17.1 |
| 6 | 24 | 18 | ..... | 7 | 24.4 | 18.5 | 21 | 20 | 18 | 10 | 21 | 21.4 | 17.1 |
| 7 | 32 | 18 | ..... | 6 | 22.9 | 18.5 | 22 | 20 | 18 | 10 | 24 | 21.4 | 17.1 |
| 8 | 28 | 18 | ..... | 6 | 22.9 | 18.5 | 23 | 20 | 18 | 9 | 27 | 21.4 | 17.1 |
| 9 | 25 | 18 | ..... | 6 | 22.9 | 18.5 | 24 | 20 | 18 | 9 | 27 | 21.4 | 17.1 |
| 10 | 24 | 18 | ..... | 9 | 22.9 | 18.5 | 25 | 20 | 18 | 9 | 27 | 20 | 17.1 |
| 11 | 24 | 18 | ..... | 9 | 22.9 | 18.5 | 26 | 20 | 18 | 9 | 27 | 20 | 17.1 |
| 12 | 24 | 18 | ..... | 21 | 22.9 | 18.5 | 27 | 18 | 18 | 9 | 27 | 20 | 17.1 |
| 13 | 24 | 18 | ..... | 18 | 21.4 | 18.5 | 28 | 18 | 18 | 9 | 22 | 20 | 17.1 |
| 14 | 23 | 18 | ..... | 18 | 21.4 | 17.1 | 29 | 18 | 18 | 9 | 0 | 22 | 18.5 |
| 15 | 21 | 18 | 9 | 18 | 21.4 | 17.1 | 30 | 18 | 6 | 9 | 0 | 21.4 | 18.5 |
| | | | | | | | 31 | ..... | 7 | ..... | 0 | 21.4 | ..... |

NOTE.—No record Nov. 1, 1912, to June 14, 1913, and July 29–31, 1913; ditch probably dry.

*Monthly discharge of Little South Fork ditch at sawmill near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1912. | | | | |
| September | 32 | 18 | 22.0 | 1,310 |
| 1912–13. | | | | |
| October | 18 | 6 | 17.0 | 1,050 |
| November | ..... | ..... | .0 | 0 |
| December | ..... | ..... | .0 | 0 |
| January | ..... | ..... | .0 | 0 |
| February | ..... | ..... | .0 | 0 |
| March | ..... | ..... | .0 | 0 |
| April | ..... | ..... | 0 | 0 |
| May | ..... | ..... | .0 | 0 |
| June | 10 | .0 | 5.0 | 298 |
| July | 27 | .0 | 15.3 | 941 |
| August | 24.4 | 18.5 | 21.4 | 1,320 |
| September | 18.5 | 17.1 | 17.8 | 1,060 |
| The year | 27 | .0 | ..... | 4,670 |

NOTE.—See note to table of daily discharge.

### PILOT CREEK NEAR QUINTETTE, CAL.

LOCATION.—In the NW. ¼ NW. ¼ sec. 10, T. 12 N., R. 12 E., at Bacchi road crossing, about three-fourths mile southwest of Bacchi, and 4 miles east of Quintette.

RECORDS AVAILABLE.—February 24, 1910, to September 30, 1913.

DRAINAGE AREA.—18.7 square miles; the natural run-off from the basin in increased by water diverted from Gerlé Creek.

GAGE.—Staff.

CHANNEL.—Compact gravel.

DISCHARGE MEASUREMENTS.—Made from cable.

DIVERSIONS.—Pilot Creek ditch.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

*Daily discharge, in second-feet of Pilot Creek near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 10 | 5 | 9 | 11 | 18 | 18 | 37 | 70 | 18 | 12 | 11 | 6 |
| 2 | 8 | 10 | 5 | 8 | 14 | 18 | 18 | 41 | 64 | 18 | 12 | 11 | 6 |
| 3 | 12 | 10 | 6 | 8 | 11 | 18 | 18 | 47 | 58 | 24 | 12 | 11 | 6 |
| 4 | 14 | 9 | 6 | 8 | 12 | 18 | 18 | 66 | 58 | 23 | 12 | 11 | 6 |
| 5 | 14 | 9 | 5 | 8 | 14 | 18 | 18 | 88 | 58 | 20 | 11 | 11 | 6 |
| 6 | 23 | 11 | 40 | 8 | 11 | 18 | 18 | 93 | 56 | 18 | 11 | 11 | 6 |
| 7 | 50 | 11 | 33 | 8 | 11 | 18 | 20 | 94 | 55 | 17 | 11 | 11 | 6 |
| 8 | 24 | 11 | 18 | 8 | 13 | 18 | 21 | 93 | 55 | 16 | 11 | 9 | 6 |
| 9 | 22 | 10 | 14 | 8 | 14 | 18 | 23 | 94 | 57 | 16 | 9 | 9 | 6 |
| 10 | 18 | 10 | 18 | 8 | 17 | 18 | 26 | 93 | 57 | 16 | 9 | 9 | 5 |
| 11 | 18 | 9 | 18 | 8 | 16 | 18 | 26 | 96 | 49 | 14 | 9 | 9 | 5 |
| 12 | 14 | 9 | 14 | 8 | 14 | 18 | 26 | 105 | 45 | 14 | 8 | 9 | 5 |
| 13 | 14 | 9 | 12 | 7 | 14 | 18 | 28 | 110 | 39 | 13 | 7 | 9 | 5 |
| 14 | 14 | 11 | 13 | 6 | 14 | 18 | 26 | 109 | 35 | 11 | 7 | 9 | 5 |
| 15 | 14 | 11 | 12 | 6 | 20 | 18 | 26 | 93 | 31 | 11 | 7 | 9 | 5 |
| 16 | 14 | 11 | 13 | 10 | 25 | 18 | 26 | 93 | 29 | 11 | 7 | 9 | 5 |
| 17 | 14 | 11 | 12 | 11 | 28 | 18 | 26 | 93 | 28 | 12 | 7 | 9 | 5 |
| 18 | 13 | 11 | 13 | 11 | 35 | 18 | 26 | 93 | 31 | 10 | 7 | 9 | 5 |
| 19 | 13 | 11 | 12 | 11 | 33 | 18 | 26 | 93 | 35 | 10 | 7 | 9 | 5 |
| 20 | 13 | 11 | 13 | 11 | 29 | 18 | 26 | 93 | 30 | 10 | 7 | 9 | 5 |
| 21 | 13 | 11 | 11 | 11 | 28 | 18 | 26 | 93 | 27 | 10 | 7 | 11 | 5 |
| 22 | 12 | 14 | 11 | 8 | 26 | 18 | 26 | 92 | 25 | 10 | 7 | 11 | 5 |
| 23 | 12 | 14 | 11 | 8 | 23 | 18 | 26 | 92 | 23 | 10 | 8 | 11 | 5 |
| 24 | 12 | 14 | 10 | 8 | 23 | 18 | 26 | 92 | 23 | 10 | 9 | 11 | 5 |
| 25 | 12 | 14 | 10 | 8 | 23 | 18 | 23 | 92 | 20 | 10 | 9 | 11 | 6 |
| 26 | 12 | 14 | 10 | 8 | 23 | 18 | 23 | 92 | 19 | 10 | 9 | 9 | 6 |
| 27 | 12 | 14 | 9 | 8 | 23 | 18 | 23 | 90 | 17 | 10 | 9 | 7 | 6 |
| 28 | 11 | 16 | 9 | 8 | 23 | 18 | 23 | 82 | 15 | 10 | 9 | 6 | 6 |
| 29 | 11 | 16 | 8 | 8 | 22 | ..... | 23 | 76 | 14 | 10 | 11 | 6 | 6 |
| 30 | 11 | 11 | 9 | 11 | 19 | ..... | 23 | 76 | 16 | 11 | 11 | 6 | 6 |
| 31 | ..... | 8 | ..... | 11 | 18 | ..... | 33 | ..... | 17 | ..... | 11 | 6 | ..... |

*Monthly discharge of Pilot Creek near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1912. | | | | |
| September | 50 | 8 | 15.1 | 898 |
| 1912–13. | | | | |
| October | 16 | 8 | 11.3 | 695 |
| November | 40 | 5 | 12.7 | 756 |
| December | 11 | 6 | 8.6 | 529 |
| January | 35 | 11 | 19.6 | 1,210 |
| February | 18 | 18 | 18.0 | 1,000 |
| March | 33 | 18 | 23.7 | 1,460 |
| April | 110 | 37 | 86.7 | 5,160 |
| May | 70 | 14 | 37.3 | 2,290 |
| June | 24 | 10 | 13.4 | 797 |
| July | 12 | 7 | 9.1 | 560 |
| August | 11 | 6 | 9.3 | 572 |
| September | 6 | 5 | 5.5 | 327 |
| The year | 110 | 5 | 21.2 | 15,400 |

NOTE.—Monthly and yearly discharge computed by engineers of the United States Geological Survey.

### PILOT CREEK DITCH NEAR QUINTETTE, CAL.

LOCATION.—Just south of gaging station on Pilot Creek.

RECORDS AVAILABLE.—February 25, 1910, to September 30, 1913.

COOPERATION.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

The quantity of water diverted by the ditch should be added to the flow of the creek at Bacchi road crossing to determine the total run-off from the drainage area of the creek above this point.

*Daily discharge, in second-feet, of Pilot Creek ditch near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15 | 15 | 7 | 8 | 1 | 7 | 7 | 13 | ..... | ..... | ..... |
| 2 | 15 | 15 | 7 | 8 | 1 | 7 | 7 | 13 | ..... | ..... | ..... |
| 3 | 16 | 15 | 7 | 8 | 1 | 7 | 7 | 13 | 10 | ..... | 18 |
| 4 | 16 | 15 | 7 | 8 | 1 | 8 | 4 | 13 | ..... | ..... | ..... |
| 5 | 17 | 15 | 7 | 8 | 1 | 8 | 3 | 12 | ..... | ..... | ..... |
| 6 | 17 | 13 | 7 | 8 | 1 | 8 | 3 | 12 | ..... | ..... | ..... |
| 7 | 17 | 13 | 7 | 7 | 1 | 8 | 9 | 11 | ..... | 19 | ..... |
| 8 | 17 | 13 | 7 | 7 | 1 | 8 | 9 | 10 | 10 | ..... | ..... |
| 9 | 17 | 13 | 7 | 7 | 1 | 8 | 9 | 10 | ..... | 19 | 18 |
| 10 | 17 | 13 | 7 | 7 | 1 | 8 | 9 | 9 | ..... | ..... | 18 |
| 11 | 17 | 13 | 8 | 7 | 1 | 6 | 9 | 9 | ..... | 19 | ..... |
| 12 | 17 | 13 | 8 | 7 | 1 | 6 | 9 | 7 | 11 | ..... | ..... |
| 13 | 17 | 13 | 8 | 6 | 1 | 6 | 9 | 7 | ..... | ..... | ..... |
| 14 | 17 | 13 | 8 | 6 | 2 | 8 | 9 | 7 | ..... | 19 | ..... |
| 15 | 17 | 13 | 8 | 6 | 2 | 9 | 9 | 7 | ..... | ..... | ..... |
| 16 | 16 | 13 | 8 | 6 | 2 | 9 | 9 | 7 | 17 | ..... | ..... |
| 17 | 16 | 13 | 8 | 6 | 2 | 9 | 9 | 11 | ..... | ..... | 17 |
| 18 | 16 | 11 | 8 | 6 | 2 | 9 | 11 | 13 | ..... | ..... | ..... |
| 19 | 16 | 11 | 8 | 6 | 2 | 9 | 11 | 14 | ..... | ..... | ..... |
| 20 | 16 | 11 | 8 | 6 | 3 | 9 | 11 | 15 | ..... | ..... | ..... |
| 21 | 16 | 11 | 9 | 6 | 3 | 8 | 11 | 15 | 19 | 18 | ..... |
| 22 | 16 | 11 | 9 | 6 | 3 | 7 | 11 | 15 | ..... | ..... | ..... |
| 23 | 16 | 11 | 9 | 4 | 3 | 7 | 11 | 15 | ..... | ..... | 17 |
| 24 | 16 | 11 | 9 | 4 | 3 | 7 | 11 | 15 | ..... | ..... | ..... |
| 25 | 16 | 11 | 9 | 4 | 3 | 7 | 11 | 15 | ..... | ..... | 17 |
| 26 | 16 | 11 | 8 | 3 | 3 | 6 | 11 | 15 | ..... | ..... | ..... |
| 27 | 16 | 9 | 8 | 3 | 3 | 6 | 11 | 15 | ..... | ..... | ..... |
| 28 | 16 | 9 | 8 | 3 | 3 | 6 | 11 | 16 | 19 | ..... | ..... |
| 29 | 16 | 9 | 8 | 3 | 3 | 6 | 11 | 15 | ..... | ..... | 17 |
| 30 | 16 | 9 | 8 | 3 | 5 | 6 | 11 | 15 | ..... | 17.1 | ..... |
| 31 | ..... | 7 | ..... | 3 | 5 | ..... | 11 | ..... | ..... | ..... | ..... |

NOTE.—Jan. 1 to Feb. 28, 1913, no record furnished; probably dry.

*Monthly discharge of Pilot Creek ditch near Quintette, Cal., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1912. | | | | |
| September | 17 | 15 | 16.3 | 970 |
| 1912-13. | | | | |
| October | 15 | 7 | 12.0 | 738 |
| November | 9 | 7 | 7.8 | 464 |
| December | 8 | 3 | 5.8 | 357 |
| January | 0 | 0 | .0 | 0 |
| February | 0 | 0 | .0 | 0 |
| March | 5 | 1 | 2.1 | 129 |
| April | 9 | 6 | 7.4 | 440 |
| May | 11 | 3 | 9.2 | 566 |
| June | 16 | 7 | 12.1 | 720 |
| July | ..... | ..... | [a] 14.0 | 861 |
| August | ..... | ..... | [a] 18.5 | 1,140 |
| September | ..... | ..... | [a] 17.0 | 1,010 |
| The year | ..... | ..... | 8.9 | 6,420 |

[a] Estimated by Stone & Webster Engineering Corporation.

NOTE.—Monthly and yearly discharge, except as noted, computed by engineers of the U. S. Geological Survey.

### SOUTH FORK OF AMERICAN RIVER NEAR PLACERVILLE, CAL.

LOCATION.—In the SE. ¼ sec. 26, T. 11 N., R. 10 E., below bridge at Chilli Bar, on Placerville-Georgetown road, about 1,000 feet below Big Canyon Creek, and 3 miles northwest of Placerville.

RECORDS AVAILABLE.—August 11, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in two sections bolted to solid rock on right bank about 1,000 feet below bridge. The high-water section is painted on the rocks above second section.

CHANNEL.—Bowlders and gravel; appears permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Just below mouth of Silver Fork, water is diverted for irrigation, mining, and the municipal supply for Placerville. Power is developed near the mouth of Rock Creek by the Western States Gas & Electric Co. Echo and Silver Lakes are used as storage reservoirs.

ACCURACY.—Rating curve well defined; results excellent.

The following discharge measurement was made by E. C. Murphy: January 9, 1913—Gage height, 4.38 feet; discharge, 231 second-feet.

*Daily gage height, in feet, of South Fork of American River near Placerville, Cal., for the year ending Sept. 30, 1913.*

[Frank Baldschun and M. M. Riggs, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.55 | 3.85 | 4.35 | 4.6 | 4.9 | 4.5 | 7.1 | 6.9 | 8.2 | 5.05 | 4.75 | 3.65 |
| 2 | 3.5 | 3.8 | 4.3 | 4.4 | 4.9 | 4.6 | 7.2 | 6.8 | 7.8 | 5.0 | 4.45 | 3.6 |
| 3 | 3.5 | 3.75 | 4.25 | 4.3 | 4.9 | 4.6 | 6.4 | 7.0 | 8.0 | 4.95 | 4.4 | 3.55 |
| 4 | 3.48 | 3.8 | 4.2 | 4.2 | 4.85 | 4.6 | 6.9 | 8.1 | 7.8 | 4.9 | 4.4 | 3.5 |
| 5 | 3.48 | 3.85 | 4.2 | 4.05 | 4.8 | 4.75 | 7.3 | 8.7 | 8.2 | 4.9 | 4.2 | 3.45 |
| 6 | 3.48 | 4.0 | 4.0 | 3.75 | 4.75 | 4.9 | 7.2 | 9.4 | 8.0 | 4.95 | 4.1 | 3.5 |
| 7 | 3.49 | 8.0 | 4.0 | 3.8 | 4.7 | 5.1 | 6.8 | 9.4 | 8.4 | 4.8 | 4.1 | 3.4 |
| 8 | 3.5 | 5.7 | 4.15 | 4.55 | 4.7 | 5.15 | 6.6 | 9.4 | 7.6 | 4.75 | 3.95 | 3.65 |
| 9 | 3.55 | 5.15 | 4.1 | 4.4 | 4.8 | 5.3 | 6.7 | 9.4 | 6.9 | 4.7 | 3.9 | 3.75 |
| 10 | 3.55 | 6.0 | 4.0 | 4.2 | 4.8 | 5.4 | 7.1 | 9.2 | 6.8 | 4.6 | 3.8 | 3.65 |
| 11 | 3.6 | 5.3 | 4.0 | 4.05 | 4.85 | 5.6 | 7.7 | 8.7 | 6.4 | 4.55 | 3.8 | 3.38 |
| 12 | 3.6 | 4.9 | 4.1 | 4.3 | 4.9 | 5.45 | 7.9 | 8.1 | 6.4 | 4.4 | 3.8 | 3.55 |
| 13 | 3.55 | 4.8 | 4.0 | 4.45 | 4.9 | 5.2 | 8.0 | 7.9 | 6.4 | 4.35 | 3.8 | 3.5 |
| 14 | 3.5 | 4.8 | 4.0 | 4.8 | 4.9 | 5.15 | 7.4 | 8.0 | 6.4 | 4.3 | 3.75 | 3.5 |
| 15 | 3.6 | 4.75 | 5.0 | 5.25 | 4.95 | 5.05 | 7.0 | 8.5 | 6.3 | 4.25 | 3.7 | 3.5 |
| 16 | 3.55 | 4.65 | 4.45 | 5.1 | 5.1 | 5.0 | 6.8 | 9.0 | 6.1 | 4.2 | 3.6 | 3.5 |
| 17 | 3.5 | 4.6 | 4.7 | 5.05 | 5.15 | 5.0 | 6.6 | 9.4 | 6.0 | 4.1 | 3.6 | 3.55 |
| 18 | 3.6 | 4.5 | 4.65 | 5.8 | 5.2 | 5.3 | 6.8 | 11.0 | 5.9 | 4.1 | 3.6 | 3.30 |
| 19 | 3.6 | 4.5 | 4.4 | 6.2 | 5.1 | 5.25 | 6.6 | 9.3 | 5.8 | 4.05 | 3.55 | 3.30 |
| 20 | 3.55 | 4.9 | 4.3 | 5.4 | 5.0 | 5.2 | 6.7 | 8.8 | 5.7 | 4.1 | 3.5 | 3.28 |
| 21 | 3.5 | 4.55 | 4.2 | 5.05 | 4.95 | 5.1 | 7.0 | 8.7 | 5.6 | 4.0 | 3.48 | 3.28 |
| 22 | 3.5 | 4.5 | 4.15 | 4.9 | 4.9 | 5.5 | 7.8 | 9.2 | 5.5 | 4.4 | 3.45 | 3.30 |
| 23 | 3.8 | 4.5 | 4.0 | 4.9 | 4.85 | 5.4 | 8.1 | 9.6 | 5.5 | 4.3 | 3.45 | 3.30 |
| 24 | 3.8 | 4.5 | 4.3 | 4.8 | 4.85 | 5.25 | 8.3 | 9.5 | 5.6 | 5.25 | 3.42 | 3.30 |
| 25 | 3.7 | 4.4 | 4.2 | 4.75 | 4.7 | 5.2 | 8.8 | 9.4 | 5.5 | 4.8 | 3.48 | 3.28 |
| 26 | 3.7 | 4.35 | 4.15 | 4.8 | 4.7 | 5.4 | 9.4 | 9.4 | 5.4 | 5.15 | 3.5 | 3.28 |
| 27 | 3.7 | 4.4 | 4.05 | 4.9 | 4.7 | 5.35 | 9.9 | 9.0 | 5.5 | 5.3 | 3.6 | 3.30 |
| 28 | 3.7 | 4.45 | 4.05 | 4.9 | 4.6 | 5.3 | 8.3 | 9.0 | 5.5 | 5.1 | 3.6 | 3.30 |
| 29 | 3.8 | 4.3 | 4.2 | 4.9 | ..... | 5.4 | 8.0 | 8.1 | 5.4 | 5.3 | 3.6 | 3.30 |
| 30 | 3.95 | 4.4 | 4.3 | 4.9 | ..... | 5.6 | 7.3 | 8.2 | 5.1 | 5.25 | 3.8 | 3.30 |
| 31 | 4.0 | ..... | 4.35 | 4.9 | ..... | 6.4 | ..... | 8.4 | ..... | 4.8 | 3.75 | ..... |

*Daily discharge, in second-feet, of South Fork of American River near Placerville, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 84 | 121 | 219 | 290 | 393 | 260 | 1,540 | 1,410 | 2,370 | 452 | 339 | 95 |
| 2 | 78 | 114 | 206 | 232 | 393 | 290 | 1,600 | 1,340 | 2,040 | 432 | 246 | 89 |
| 3 | 78 | 108 | 194 | 206 | 393 | 290 | 1,100 | 1,480 | 2,200 | 412 | 232 | 84 |
| 4 | 76 | 114 | 183 | 183 | 374 | 290 | 1,410 | 2,280 | 2,040 | 393 | 232 | 78 |
| 5 | 76 | 121 | 183 | 153 | 356 | 339 | 1,680 | 2,820 | 2,370 | 393 | 183 | 73 |
| 6 | 76 | 144 | 144 | 108 | 339 | 393 | 1,600 | 3,450 | 2,200 | 412 | 162 | 78 |
| 7 | 77 | 2,200 | 144 | 114 | 322 | 472 | 1,340 | 3,450 | 2,540 | 356 | 162 | 68 |
| 8 | 78 | 730 | 172 | 275 | 322 | 492 | 1,220 | 3,450 | 1,890 | 339 | 136 | 95 |
| 9 | 84 | 492 | 162 | 232 | 356 | 554 | 1,280 | 3,450 | 1,410 | 322 | 128 | 108 |
| 10 | 84 | 875 | 144 | 183 | 356 | 596 | 1,540 | 3,260 | 1,340 | 290 | 114 | 95 |
| 11 | 89 | 554 | 144 | 153 | 374 | 685 | 1,960 | 2,820 | 1,100 | 275 | 114 | 66 |
| 12 | 89 | 393 | 162 | 206 | 393 | 618 | 2,120 | 2,280 | 1,100 | 232 | 114 | 84 |
| 13 | 84 | 356 | 144 | 246 | 393 | 512 | 2,200 | 2,120 | 1,100 | 219 | 114 | 78 |
| 14 | 78 | 356 | 144 | 356 | 393 | 492 | 1,740 | 2,200 | 1,100 | 206 | 108 | 78 |
| 15 | 89 | 339 | 432 | 533 | 412 | 452 | 1,480 | 2,640 | 1,040 | 194 | 101 | 78 |
| 16 | 84 | 306 | 246 | 472 | 472 | 432 | 1,340 | 3,080 | 925 | 183 | 89 | 78 |
| 17 | 78 | 290 | 322 | 452 | 492 | 432 | 1,220 | 3,450 | 875 | 162 | 89 | 84 |
| 18 | 89 | 260 | 306 | 775 | 512 | 554 | 1,340 | 5,100 | 825 | 162 | 89 | 59 |
| 19 | 89 | 260 | 232 | 980 | 472 | 533 | 1,220 | 3,360 | 775 | 153 | 84 | 59 |
| 20 | 84 | 393 | 206 | 596 | 432 | 512 | 1,280 | 2,900 | 730 | 162 | 78 | 57 |
| 21 | 78 | 275 | 183 | 452 | 412 | 472 | 1,480 | 2,820 | 685 | 144 | 76 | 57 |
| 22 | 78 | 260 | 172 | 393 | 393 | 640 | 2,040 | 3,260 | 640 | 232 | 73 | 59 |
| 23 | 114 | 260 | 144 | 393 | 374 | 596 | 2,280 | 3,640 | 640 | 206 | 73 | 59 |
| 24 | 114 | 260 | 206 | 356 | 374 | 533 | 2,460 | 3,540 | 685 | 533 | 70 | 59 |
| 25 | 101 | 232 | 183 | 339 | 322 | 512 | 2,900 | 3,450 | 640 | 356 | 76 | 57 |
| 26 | 101 | 219 | 172 | 356 | 322 | 596 | 3,450 | 3,450 | 596 | 492 | 78 | 57 |
| 27 | 101 | 232 | 153 | 393 | 322 | 575 | 3,940 | 3,080 | 640 | 554 | 89 | 59 |
| 28 | 101 | 246 | 153 | 393 | 290 | 554 | 2,460 | 3,080 | 640 | 472 | 89 | 59 |
| 29 | 114 | 206 | 183 | 393 | ..... | 596 | 2,200 | 2,280 | 596 | 554 | 89 | 59 |
| 30 | 136 | 232 | 206 | 393 | ..... | 685 | 1,680 | 2,370 | 472 | 533 | 114 | 59 |
| 31 | 144 | ..... | 219 | 393 | ..... | 1,100 | ..... | 2,540 | ..... | 356 | 108 | ..... |

NOTE.—Discharge determined from a well-defined rating curve.

*Monthly discharge of South Fork of American River near Placerville, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 144 | 76 | 91.2 | 5,610 | A. |
| November | 2,200 | 108 | 365 | 21,700 | A. |
| December | 432 | 144 | 196 | 12,100 | A. |
| January | 980 | 108 | 355 | 21,800 | A. |
| February | 512 | 290 | 384 | 21,300 | A. |
| March | 1,100 | 260 | 518 | 31,900 | A. |
| April | 3,940 | 1,100 | 1,840 | 109,000 | A. |
| May | 5,100 | 1,340 | 2,900 | 178,000 | A. |
| June | 2,540 | 472 | 1,210 | 72,000 | A. |
| July | 554 | 144 | 328 | 20,200 | A. |
| August | 339 | 70 | 124 | 7,620 | A. |
| September | 108 | 57 | 72.3 | 4,300 | A. |
| The year | 5,100 | 57 | 699 | 506,000 | |

## CLEAR LAKE AT LAKEPORT, CAL.

LOCATION.—At municipal wharf on north side of Third Street at Lakeport.
RECORDS AVAILABLE.—January 1 to September 30, 1913.
GAGE.—Vertical staff fastened to piling at wharf.
COOPERATION.—Gage-height record furnished by Yolo Water & Power Co.

*Daily gage height, in feet, of Clear Lake at Lakeport, Cal., for the year ending Sept. 30, 1913.*

[E. S. Meddaugh, observer.]

| Day. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.65 | 4.13 | 4.00 | 3.80 | 3.70 | 3.31 | 2.56 | 2.08 | 1.48 |
| 2 | 1.65 | 4.13 | 3.94 | 3.81 | 3.75 | 3.30 | 2.53 | 2.01 | 1.47 |
| 3 | 1.65 | 4.13 | 3.91 | 3.85 | 3.70 | 3.30 | 2.54 | 1.98 | 1.42 |
| 4 | 1.66 | 4.15 | 3.95 | 3.86 | 3.65 | 3.28 | 2.54 | 1.98 | 1.39 |
| 5 | 1.65 | 4.15 | 3.92 | 3.86 | 3.67 | 3.27 | 2.52 | 1.99 | 1.38 |
| 6 | 1.65 | 4.15 | 3.91 | 3.91 | 3.61 | 3.20 | 2.50 | 1.95 | 1.35 |
| 7 | 1.65 | 4.15 | 3.91 | 3.95 | 3.59 | 3.18 | 2.48 | 1.91 | 1.31 |
| 8 | 1.73 | 4.13 | 3.90 | 3.96 | 3.55 | 3.16 | 2.50 | 1.89 | 1.29 |
| 9 | 1.73 | 4.16 | 3.90 | 3.97 | 3.60 | 3.10 | 2.50 | 1.88 | 1.30 |
| 10 | 1.73 | 4.15 | 3.89 | 3.97 | 3.59 | 3.05 | 2.45 | 1.82 | 1.28 |
| 11 | 1.75 | 4.12 | 3.86 | 3.94 | 3.60 | 3.08 | 2.40 | 1.81 | 1.28 |
| 12 | 1.90 | 4.13 | 3.78 | 3.90 | 3.50 | 2.98 | 2.40 | 1.80 | 1.27 |
| 13 | 2.01 | 4.12 | 3.80 | 3.95 | 3.55 | 2.98 | 2.31 | 1.78 | 1.22 |
| 14 | 2.33 | 4.08 | 3.80 | 3.93 | 3.50 | 2.96 | 2.34 | 1.76 | 1.23 |
| 15 | 2.56 | 4.10 | 3.79 | 3.90 | 3.50 | 2.95 | 2.31 | 1.73 | 1.21 |
| 16 | 2.83 | 4.10 | 3.79 | 3.90 | 3.48 | 2.93 | 2.31 | 1.69 | 1.20 |
| 17 | 3.14 | 4.10 | 3.79 | 3.90 | 3.52 | 2.90 | 2.30 | 1.65 | 1.21 |
| 18 | 3.40 | 4.08 | 3.81 | 3.92 | 3.45 | 2.89 | 2.29 | 1.65 | 1.20 |
| 19 | 3.67 | 4.08 | 3.80 | 3.90 | 3.45 | 2.87 | 2.27 | 1.63 | 1.19 |
| 20 | 3.83 | 4.08 | 3.80 | 3.89 | 3.47 | 2.87 | 2.27 | 1.61 | 1.18 |
| 21 | 3.92 | 4.05 | 3.82 | 3.90 | 3.47 | 2.85 | 2.19 | 1.60 | 1.15 |
| 22 | 4.00 | 4.05 | 3.85 | 3.90 | 3.46 | 2.82 | 2.16 | 1.60 | 1.13 |
| 23 | 4.04 | 4.03 | 3.87 | 3.89 | 3.45 | 2.75 | 2.20 | 1.58 | 1.12 |
| 24 | 4.08 | 3.99 | 3.88 | 3.88 | 3.48 | 2.73 | 2.19 | 1.55 | 1.09 |
| 25 | 4.08 | 4.03 | 3.85 | 3.86 | 3.40 | 2.75 | 2.16 | 1.54 | 1.05 |
| 26 | 4.10 | 3.94 | 3.85 | 3.85 | 3.38 | 2.74 | 2.11 | 1.52 | 1.06 |
| 27 | 4.12 | 3.96 | 3.86 | 3.78 | 3.36 | 2.74 | 2.11 | 1.51 | 1.03 |
| 28 | 4.13 | 3.98 | 3.85 | 3.80 | 3.36 | 2.70 | 2.10 | 1.50 | .95 |
| 29 | 4.14 | ..... | 3.85 | 3.71 | 3.35 | 2.66 | 2.09 | 1.50 | 1.00 |
| 30 | 4.15 | ..... | 3.87 | 3.70 | 3.35 | 2.60 | 2.06 | 1.49 | 1.00 |
| 31 | 4.16 | ..... | 3.85 | ..... | 3.33 | ..... | 2.02 | 1.49 | ..... |

## CACHE CREEK AT LOWER LAKE, CAL.

LOCATION.—In the SE. ¼ SE. ¼ sec. 34, T. 13 N., R. 7 W., above highway bridge near outlet of Clear Lake, about 750 feet above mouth of Seigler Creek and 1 mile north of Lower Lake.

RECORDS AVAILABLE.—January 1, 1901, to September 30, 1913.

DRAINAGE AREA.—500 square miles.

GAGE.—Vertical staff on left bank 800 feet above bridge.

CHANNEL.—Gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading. Flow of Seigler Creek is deducted when measurements are made from bridge.

ACCURACY.—At high stages Seigler Creek deposits gravel at its junction with Cache Creek and forms a small bar that sometimes affects discharge relation. At low water the channel is sometimes deepened in order to increase the flow from the lake. This was done about the middle of September, 1912. The measurement made December 11, 1912, shows the amount of change. On account of the change in channel at low water and uncertainty of rating curve at high water results are only fair at those stages.

*Discharge measurements of Cache Creek at Lower Lake, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 11 | R. C. Rice | 1.69 | 8.5 | Feb. 26 | E. C. Murphy | 3.79 | 272 |
| Feb. 26 | E. C. Murphy | 3.78 | 278 | Aug. 11 | Charles Leidl | 2.11 | 34 |

*Daily gage height, in feet, of Cache Creek, at Lower Lake, Cal., for the year ending Sept. 30, 1913.*

[L. T. Anderson, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.70 | 1.40 | 1.78 | 2.10 | 3.8 | 3.7 | 3.75 | 3.55 | 3.2 | 2.80 | 2.20 | 1.80 |
| 2 | 1.70 | 1.45 | 1.80 | 2.10 | 3.8 | 3.7 | 3.65 | 3.55 | 3.2 | 2.78 | 2.30 | 1.90 |
| 3 | 1.70 | 1.50 | 1.92 | 2.10 | 3.8 | 3.6 | 3.65 | 3.55 | 3.2 | 2.70 | 2.25 | 1.88 |
| 4 | 1.70 | 1.48 | 1.80 | 2.10 | 3.8 | 3.65 | 3.7 | 3.55 | 3.2 | 2.70 | 2.20 | 1.90 |
| 5 | 1.60 | 1.42 | 1.72 | 2.05 | 3.8 | 3.7 | 3.7 | 3.5 | 3.2 | 2.65 | 2.20 | 1.90 |
| 6 | 1.60 | 1.68 | 1.75 | 2.05 | 3.8 | 3.7 | 3.7 | 3.5 | 3.2 | 2.65 | 2.20 | 1.80 |
| 7 | 1.60 | 1.60 | 1.75 | 2.10 | 3.8 | 3.7 | 3.7 | 3.5 | 3.2 | 2.65 | 2.20 | 1.80 |
| 8 | 1.60 | 1.60 | 1.70 | 2.00 | 3.8 | 3.6 | 3.7 | 3.5 | 3.25 | 2.65 | 2.20 | 1.85 |
| 9 | 1.60 | 1.60 | 1.70 | 2.05 | 3.8 | 3.65 | 3.7 | 3.5 | 3.1 | 2.65 | 2.10 | 1.75 |
| 10 | 1.60 | 1.80 | 1.70 | 2.10 | 3.8 | 3.7 | 3.7 | 3.5 | 3.1 | 2.60 | 2.15 | 1.70 |
| 11 | 1.60 | 1.70 | 1.70 | 2.05 | 3.8 | 3.65 | 3.7 | 3.5 | 3.05 | 2.85 | 2.10 | 1.70 |
| 12 | 1.58 | 1.78 | 1.70 | 2.10 | 3.8 | 3.7 | 3.7 | 3.5 | 3.05 | 2.58 | 2.10 | 1.70 |
| 13 | 1.58 | 1.78 | 1.70 | 2.30 | 3.8 | 3.7 | 3.7 | 3.5 | 3.0 | 2.58 | 2.10 | 1.70 |
| 14 | 1.58 | 1.75 | 1.80 | 2.65 | ..... | 3.6 | 3.7 | 3.5 | 3.0 | 2.55 | 2.10 | 1.70 |
| 15 | 1.58 | 1.70 | 1.90 | 2.80 | ..... | 3.6 | 3.7 | 3.4 | 2.98 | 2.50 | 2.05 | 1.65 |
| 16 | 1.58 | 1.70 | 1.90 | 3.2 | 3.8 | 3.6 | 3.7 | 3.4 | 2.92 | 2.50 | 2.05 | 1.65 |
| 17 | 1.55 | 1.78 | 2.00 | 3.2 | 3.8 | 3.55 | 3.7 | 3.4 | 2.90 | 2.45 | 2.00 | 1.68 |
| 18 | 1.55 | 1.78 | 2.00 | 3.4 | 3.8 | 3.6 | 3.7 | 3.4 | 2.90 | 2.45 | 1.95 | 1.65 |
| 19 | 1.60 | 1.90 | 2.00 | 3.55 | 3.75 | 3.8 | 3.65 | 3.4 | 2.90 | 2.45 | 1.95 | 1.65 |
| 20 | 1.50 | 1.75 | 2.00 | 3.6 | 3.75 | 3.6 | 3.65 | 3.55 | 2.90 | 2.45 | 1.95 | 1.60 |
| 21 | 1.50 | 1.75 | 2.00 | 3.6 | 3.75 | 3.55 | 3.7 | 3.3 | 2.90 | 2.40 | 1.95 | 1.65 |
| 22 | 1.58 | 1.75 | 2.05 | 3.65 | 3.7 | 3.7 | 3.65 | 3.3 | 2.88 | 2.40 | 1.92 | 1.55 |
| 23 | 1.48 | 1.78 | 2.10 | 3.7 | 3.7 | 3.7 | 3.6 | 3.3 | 2.88 | 2.40 | 1.95 | 1.50 |
| 24 | 1.40 | 1.75 | 2.10 | 3.7 | 3.7 | 3.7 | 3.6 | 3.3 | 2.90 | 2.40 | 1.92 | 1.50 |
| 25 | 1.50 | 1.75 | 2.00 | 3.8 | 3.7 | 3.6 | 3.6 | 3.3 | 2.85 | 2.38 | 1.98 | 1.58 |
| 26 | 1.48 | 1.75 | 2.00 | 3.8 | 3.8 | 3.6 | 3.7 | 3.3 | 2.85 | 2.32 | 1.90 | 1.50 |
| 27 | 1.55 | 1.75 | 2.00 | 3.8 | 3.7 | 3.65 | 3.7 | 3.3 | 2.80 | 2.30 | 1.82 | 1.45 |
| 28 | 1.40 | 1.75 | 2.00 | 3.8 | 3.7 | 3.65 | 3.6 | 3.3 | 2.80 | 2.30 | 1.88 | 1.62 |
| 29 | 1.40 | 1.75 | 2.00 | 3.8 | ..... | 3.65 | 3.6 | 3.25 | 2.80 | 2.30 | 1.90 | 1.62 |
| 30 | 1.48 | 1.65 | 2.10 | 3.8 | ..... | ..... | 3.6 | 3.25 | 2.80 | 2.30 | 1.85 | 1.40 |
| 31 | 1.48 | ..... | 2.05 | 3.8 | ..... | ..... | ..... | 3.2 | ..... | 2.30 | 1.85 | ..... |

*Daily discharge, in second-feet, of Cache Creek at Lower Lake, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 1.0 | 12 | 33 | 277 | 257 | 267 | 228 | 164 | 105 | 41 | 13 |
| 2 | 9.0 | 2.0 | 13 | 33 | 277 | 257 | 247 | 228 | 164 | 102 | 50 | 0 |
| 3 | 9.0 | 3.0 | 20 | 33 | 277 | 237 | 247 | 228 | 164 | 92 | 46 | 0 |
| 4 | 9.0 | 2.6 | 13 | 33 | 277 | 247 | 257 | 228 | 164 | 92 | 41 | 0 |
| 5 | 6.0 | 1.4 | 9.8 | 30 | 277 | 257 | 257 | 218 | 164 | 86 | 41 | 0 |
| 6 | 6.0 | 8.4 | 11 | 30 | 277 | 257 | 257 | 218 | 164 | 86 | 41 | 0 |
| 7 | 6.0 | 6.0 | 11 | 33 | 277 | 257 | 257 | 218 | 164 | 86 | 41 | 0 |
| 8 | 6.0 | 6.0 | 9.0 | 26 | 277 | 237 | 257 | 218 | 172 | 86 | 41 | 0 |
| 9 | 6.0 | 6.0 | 9.0 | 30 | 277 | 247 | 257 | 218 | 148 | 86 | 33 | 0 |
| 10 | 6.0 | 13 | 9.0 | 33 | 277 | 257 | 257 | 218 | 148 | 81 | 37 | 0 |
| 11 | 6.0 | 9.0 | 9.0 | 30 | 277 | 247 | 257 | 218 | 140 | 80 | 33 | 0 |
| 12 | 5.4 | 12 | 9.0 | 33 | 277 | 257 | 257 | 218 | 140 | 79 | 33 | 0 |
| 13 | 5.4 | 12 | 9.0 | 50 | 277 | 257 | 257 | 218 | 133 | 79 | 33 | 0 |
| 14 | 5.4 | 11 | 13 | 86 | 277 | 237 | 257 | 218 | 133 | 76 | 33 | 0 |
| 15 | 5.4 | 9.0 | 19 | 105 | 277 | 237 | 257 | 199 | 130 | 70 | 30 | 5 |
| 16 | 5.4 | 9.0 | 19 | 164 | 277 | 237 | 257 | 199 | 122 | 70 | 30 | 5 |
| 17 | 4.5 | 12 | 26 | 164 | 277 | 228 | 257 | 199 | 119 | 65 | 26 | 5 |
| 18 | 4.5 | 12 | 26 | 199 | 277 | 237 | 257 | 199 | 119 | 65 | 22 | 5 |
| 19 | 6.0 | 19 | 26 | 228 | 267 | 277 | 247 | 199 | 119 | 65 | 22 | 0 |
| 20 | 3.0 | 11 | 26 | 237 | 267 | 237 | 247 | 228 | 119 | 65 | 22 | 0 |
| 21 | 3.0 | 11 | 26 | 237 | 267 | 228 | 257 | 181 | 119 | 60 | 22 | 0 |
| 22 | 5.4 | 11 | 30 | 247 | 257 | 257 | 247 | 181 | 116 | 60 | 20 | 0 |
| 23 | 2.6 | 12 | 33 | 257 | 257 | 257 | 237 | 181 | 116 | 60 | 22 | 0 |
| 24 | 1.0 | 11 | 33 | 257 | 257 | 257 | 237 | 181 | 119 | 60 | 20 | 0 |
| 25 | 3.0 | 11 | 26 | 277 | 257 | 237 | 237 | 181 | 112 | 58 | 25 | 0 |
| 26 | 2.6 | 11 | 26 | 277 | 277 | 237 | 257 | 181 | 112 | 52 | 19 | 0 |
| 27 | 4.5 | 11 | 26 | 277 | 257 | 247 | 257 | 181 | 105 | 50 | 14 | 0 |
| 28 | 1.0 | 11 | 26 | 277 | 257 | 247 | 237 | 181 | 105 | 50 | 18 | 0 |
| 29 | 1.0 | 11 | 26 | 277 | ..... | 247 | 237 | 172 | 105 | 50 | 19 | 0 |
| 30 | 2.6 | 7.5 | 33 | 277 | ..... | 254 | 237 | 172 | 105 | 50 | 16 | 0 |
| 31 | 2.6 | ..... | 30 | 277 | ..... | 260 | ..... | 164 | ..... | 50 | 16 | ..... |

NOTE.—Discharge determined from a rating curve well defined between 20 and 4,000 second-feet. Discharge interpolated Feb. 14 and 15, Mar. 30 and 31, and July 11. No flow Sept. 2–14 and 19–30. Discharge estimated Sept. 15–18.

*Monthly discharge of Cache Creek at Lower Lake, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 9.0 | 1.0 | 4.91 | 302 | C. |
| November | 19 | 1.0 | 9.10 | 542 | B. |
| December | 33 | 9.0 | 19.8 | 1,220 | B. |
| January | 277 | 26 | 147 | 9,040 | A. |
| February | 277 | 257 | 272 | 15,100 | A. |
| March | 277 | 228 | 248 | 15,200 | A. |
| April | 267 | 237 | 252 | 15,000 | A. |
| May | 228 | 164 | 202 | 12,400 | A. |
| June | 172 | 105 | 133 | 7,910 | B. |
| July | 105 | 50 | 71.5 | 4,400 | B. |
| August | 50 | 14 | 29.3 | 1,800 | B. |
| September | 13 | 0 | 1.1 | 65.5 | D. |
| The year | 277 | 0 | 115 | 83,000 | |

## CACHE CREEK AT YOLO, CAL.

LOCATION.—At highway bridge one-half mile south of Yolo, in Río Jesús María grant, 1,000 feet above Southern Pacific Co.'s bridge.

RECORDS AVAILABLE.—January 1, 1903, to September 30, 1913.

DRAINAGE AREA.—1,320 square miles.

GAGE.—Staff in four sections, installed October 2, 1904, at same datum as original gage at bridge. Lowest section vertical, fastened to pile under bridge near left bank; second section, inclined, on right bank, 30 feet above bridge; third section, vertical, fastened to cottonwood tree on right bank 70 feet above bridge; upper section vertical, fastened to upper end of right abutment.

CHANNEL.—Sand and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Numerous ditches divert water for irrigation above the station.

ACCURACY.—Results good except high-water estimates, which are fair.

*Discharge measurements of Cache Creek at Yolo, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 6 | E. C. Murphy | [a] 1.32 | 16 | Feb. 20 | E. C. Murphy | 2.10 | 322 |
| 13 | do | 8.26 | 4,580 | Mar. 4 | do | 1.58 | 107 |
| 23 | do | 3.18 | 801 | May 5 | Lasley Lee | 1.18 | 24 |
| 31 | do | 2.60 | 498 | 19 | E. C. Murphy | | Dry. |

[a] Stream frozen over at gage.

*Daily gage height, in feet, and discharge, in second-feet, of Cache Creek at Yolo, Cal., for the year ending Sept. 30, 1913.*

[Mrs. C. W. Bigelow, observer.]

| Day. | December. | | January. | | February. | | March. | | April. | | May. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge |
| 1 | ..... | ..... | 1.25 | 8.5 | 2.5 | 472 | 1.95 | 226 | 1.38 | 62 | 1.05 | 12 |
| 2 | ..... | ..... | 1.30 | 13 | 2.5 | 472 | 1.90 | 206 | 1.35 | 56 | 1.80 | 1.5 |
| 3 | ..... | ..... | 1.30 | 13 | 2.45 | 451 | 1.82 | 178 | 1.35 | 56 | ..... | .0 |
| 4 | ..... | ..... | 1.30 | 13 | 2.45 | 451 | 1.68 | 134 | 1.50 | 88 | ..... | .0 |
| 5 | ..... | ..... | 1.30 | 13 | 2.4 | 430 | 1.55 | 134 | 1.50 | 88 | 1.19 | 26 |
| 6 | ..... | ..... | 1.30 | 13 | 2.4 | 430 | 1.45 | 77 | 1.81 | 170 | 1.20 | 27 |
| 7 | ..... | ..... | 1.30 | 13 | 2.35 | 410 | 1.28 | 41 | 2.0 | 228 | 1.25 | 36 |
| 8 | ..... | ..... | 1.30 | 13 | 2.35 | 410 | 1.15 | 21 | 2.0 | 197 | 1.25 | 4.0 |
| 9 | ..... | ..... | 1.32 | 16 | 2.35 | 410 | .88 | 3.5 | 1.90 | 197 | .90 | 4.0 |
| 10 | ..... | ..... | 1.35 | 20 | 2.3 | 390 | .78 | 1.3 | 1.88 | 191 | ..... | 2.0 |
| 11 | ..... | ..... | 1.35 | 20 | 2.3 | 390 | ..... | .6 | 1.78 | 161 | ..... | .0 |
| 12 | ..... | ..... | 1.35 | 20 | 2.3 | 390 | ..... | .0 | 1.65 | 126 | ..... | .0 |
| 13 | ..... | ..... | 1.35 | 20 | 2.25 | 370 | ..... | .0 | 1.50 | 88 | ..... | ..... |
| 14 | ..... | ..... | 5.6 | 2,060 | 2.25 | 370 | ..... | .0 | 1.45 | 77 | ..... | .0 |
| 15 | ..... | ..... | 5.1 | 1,720 | 2.2 | 350 | ..... | .0 | 1.58 | 107 | ..... | .0 |
| 16 | ..... | 180 | 4.6 | 1,410 | 2.2 | 350 | ..... | .0 | 1.65 | 126 | ..... | .0 |
| 17 | ..... | 250 | 4.6 | 1,410 | 2.2 | 350 | ..... | .0 | 1.55 | 100 | ..... | .0 |
| 18 | 1.80 | 128 | 5.6 | 2,060 | 2.15 | 331 | ..... | .0 | 1.55 | 100 | ..... | ..... |
| 19 | 1.68 | 94 | 7.5 | 3,790 | 2.15 | 331 | ..... | .0 | 1.50 | 88 | ..... | ..... |
| 20 | 1.65 | 86 | 4.6 | 1,550 | 2.1 | 312 | ..... | .0 | 1.50 | 88 | ..... | ..... |
| 21 | 1.60 | 72 | 3.8 | 1,100 | 2.1 | 312 | ..... | .0 | 1.50 | 88 | ..... | ..... |
| 22 | 1.55 | 60 | 3.4 | 895 | 2.0 | 260 | ..... | .0 | 1.48 | 84 | ..... | ..... |
| 23 | 1.45 | 38 | 3.2 | 795 | 2.0 | 257 | ..... | .0 | 1.35 | 56 | ..... | ..... |
| 24 | 1.40 | 28 | 2.95 | 676 | 2.0 | 254 | 1.20 | 27 | 1.28 | 41 | ..... | ..... |
| 25 | 1.40 | 28 | 2.75 | 584 | 2.0 | 250 | 1.38 | 62 | 1.15 | 21 | ..... | ..... |
| 26 | 1.35 | 20 | 2.7 | 561 | 2.0 | 247 | 1.18 | 25. | .88 | 3.5 | ..... | ..... |
| 27 | 1.35 | 20 | 2.65 | 538 | 2.0 | 244 | .85 | 2.8 | ..... | 1.8 | ..... | ..... |
| 28 | 1.30 | 13 | 2.65 | 538 | 2.0 | 242 | 1.00 | 8.0 | ..... | .0 | ..... | ..... |
| 29 | 1.30 | 13 | 2.6 | 516 | ..... | ..... | 1.08 | 14 | ..... | .0 | ..... | ..... |
| 30 | 1.25 | 8.5 | 2.6 | 516 | ..... | ..... | 1.15 | 21 | ..... | .0 | ..... | ..... |
| 31 | 1.25 | 8.5 | 2.55 | 494 | ..... | ..... | 1.32 | 49 | ..... | ..... | ..... | ..... |

NOTE.—Creek dry Oct. 1 to Dec. 15, 1912, and May 18 to Sept. 30, 1913. No flow (water standing in pools) Mar. 12–23, Apr. 28–30, and May 11–17, 1913. Mar. 11, Apr. 27, and May 10, water was running in the morning and standing in pools in the afternoon; discharge estimated. No gage reading Dec. 16 and 17, 1912; discharge estimated by comparison of record of this station with that of Putah Creek at Winters. Jan. 6, 1913, stream was frozen over at gage; effect on discharge not considered as it was probably very slight. Discharge determined as follows: Dec. 18 to Jan. 18 from a fairly well defined rating curve; Jan. 19 to Feb. 21 from a rating curve well defined between 300 and 1,200 second-feet; Feb. 22 to Mar. 3, by the indirect method for shifting channels; Mar. 4 to May 10 from a fairly well defined curve.

*Monthly discharge of Cache Creek at Yolo, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 0 | 0.0 | 0.00 | 0 | |
| November | 0 | .0 | .00 | 0 | |
| December | 250 | .0 | 33.8 | 2,080 | C. |
| January | 3,790 | 8.5 | 691 | 42,500 | B. |
| February | 472 | 242 | 355 | 19,700 | B. |
| March | 226 | .0 | 38.6 | 2,370 | B. |
| April | 228 | .0 | 90.7 | 5,400 | B. |
| May | 36 | .0 | 4.66 | 287 | C. |
| June | 0 | .0 | .00 | 0 | |
| July | 0 | .0 | .00 | 0 | |
| August | 0 | .0 | .00 | 0 | |
| September | 0 | .0 | .00 | 0 | |
| The year | 3,790 | .0 | 99.9 | 72,300 | |

## PUTAH CREEK AT WINTERS, CAL.

LOCATION.—Just below Southern Pacific Co.'s bridge at Winters, in the Rio de los Putos grant.

RECORDS AVAILABLE.—September 26, 1905, to September 30, 1913.

DRAINAGE AREA.—805 square miles.

GAGE.—Staff in five sections on left bank, 600 feet below bridge.

An auxiliary vertical staff on right bank is used for low-water readings.

CHANNEL.—Sand and gravel; somewhat shifting. Two channels at low water.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

DIVERSIONS.—Several small diversions for irrigation above station.

ACCURACY.—On account of shifting channel, results are only fair.

*Discharge measurements of Putah Creek at Winters, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height (left bank). | Gage height (right bank). | Discharge. | Date. | Made by— | Gage height (left bank). | Gage height (right bank). | Discharge. |
|---|---|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Feet.* | *Sec. ft.* | | | *Feet.* | *Feet.* | *Sec. ft.* |
| Oct. 22 | Lasley Lee | ..... | 4.82 | 2.4 | Mar. 3 | E. C. Murphy | 4.88 | 5.20 | 82 |
| Jan. 4 | E. C. Murphy | 4.84 | 5.25 | 69 | Apr. 12 | do | 5.09 | 5.36 | 151 |
| 18 | do | 12.40 | ..... | 6,910 | May 4 | Lasley Lee | ..... | 4.91 | 47 |
| 18 | do | 16.70 | ..... | 11,500 | 20 | E. C. Murphy | 4.58 | 4.78 | 31 |
| 28 | do | ..... | 7.35 | 1,350 | June 27 | do | ..... | 4.28 | 1.4 |
| Feb. 21 | do | 4.97 | 5.29 | 103 | | | | | |

*Daily gage height, in feet, of Putah Creek at Winters, Cal., for the year ending Sept. 30, 1913.*

[Miss Velma Wyatt, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.60 | 4.89 | 5.11 | 5.29 | 5.83 | 5.20 | 5.29 | 4.93 | 4.68 | 4.27 |
| 2 | ..... | 4.89 | 5.10 | 5.30 | 5.78 | 5.20 | 5.27 | 4.92 | 4.66 | 4.24 |
| 3 | ..... | 4.90 | 5.10 | 5.29 | 5.73 | 5.19 | 5.26 | 4.91 | 4.64 | 4.22 |
| 4 | ..... | 4.90 | 5.09 | 5.25 | 5.69 | 5.19 | 5.26 | 4.91 | 4.62 | 4.20 |
| 5 | ..... | 4.90 | 5.09 | 5.23 | 5.67 | 5.17 | 5.80 | 4.89 | 4.60 | 4.19 |
| 6 | 4.60 | 4.97 | 5.08 | 5.20 | 5.64 | 5.16 | 6.1 | 4.86 | 4.59 | 4.14 |
| 7 | 4.65 | 7.0 | 5.07 | 5.19 | 5.61 | 5.15 | 5.77 | 4.83 | 4.56 | 4.10 |
| 8 | 4.70 | 5.89 | 5.07 | 5.21 | 5.58 | 5.13 | 5.63 | 4.82 | 4.55 | 4.00 |
| 9 | 4.70 | 5.60 | 5.06 | 5.23 | 5.55 | 5.12 | 5.51 | 4.82 | 4.52 | ..... |
| 10 | 4.70 | 6.9 | 5.05 | 5.47 | 5.51 | 5.11 | 5.47 | 4.84 | 4.50 | ..... |
| 11 | 4.70 | 5.95 | 5.03 | 5.40 | 5.5 | 5.10 | 5.43 | 4.89 | 4.50 | ..... |
| 12 | 4.70 | 5.76 | 5.01 | 5.37 | 5.47 | 5.10 | 5.34 | 4.89 | 4.49 | ..... |
| 13 | 4.75 | 5.60 | 5.00 | 10.1 | 5.44 | 5.09 | 5.34 | 4.89 | 4.48 | ..... |
| 14 | 4.77 | 5.49 | 5.04 | 13.8 | 5.41 | 5.08 | 5.31 | 4.88 | 4.47 | ..... |
| 15 | 4.79 | 5.40 | 5.08 | 12.4 | 5.39 | 5.07 | 5.28 | 4.87 | 4.46 | ..... |
| 16 | 4.79 | 5.49 | 6.1 | 10.1 | 5.38 | 5.06 | 5.26 | 4.86 | 4.44 | ..... |
| 17 | 4.79 | 5.40 | 6.4 | 8.9 | 5.36 | 5.06 | 5.24 | 4.85 | 4.42 | ..... |
| 18 | 4.79 | 5.35 | 5.90 | 13.1 | 5.34 | 5.25 | 5.19 | 4.83 | 4.40 | ..... |
| 19 | 4.79 | 5.30 | 5.76 | 9.8 | 5.31 | 5.47 | 5.18 | 4.83 | 4.42 | ..... |
| 20 | 4.79 | 5.29 | 5.64 | 7.9 | 5.3 | 5.47 | 5.17 | 4.80 | 4.42 | ..... |
| 21 | 4.79 | 5.29 | 5.57 | 7.2 | 5.29 | 5.43 | 5.13 | 4.77 | 4.42 | ..... |
| 22 | 4.80 | 5.30 | 5.49 | 6.8 | 5.28 | 5 50 | 5.11 | 4.75 | 4.40 | ..... |
| 23 | 4.81 | 5.28 | 5.41 | 6.5 | 5.28 | 6.25 | 5.08 | 4.73 | 4.38 | ..... |
| 24 | 4.83 | 5.25 | 5.39 | 6.35 | 5.3 | 6.0 | 5.06 | 4.72 | 4.34 | ..... |
| 25 | 4.87 | 5.20 | 5.37 | 6.2 | 5.31 | 5.81 | 5.03 | 4.70 | 4.32 | ..... |
| 26 | 4.88 | 5.19 | 5.33 | 6.1 | 5.29 | 5.67 | 4.99 | 4.68 | 4.30 | ..... |
| 27 | 4.88 | 5.19 | 5.30 | 5.90 | 5.28 | 5.58 | 4.97 | 4.68 | 4.28 | ..... |
| 28 | 4.88 | 5.17 | 5.28 | 6.6 | 5.24 | 5.48 | 4.94 | 4.73 | 4.29 | ..... |
| 29 | 4.89 | 5.15 | 5.27 | 5.75 | ..... | 5.42 | 4.94 | 4.72 | 4.29 | ..... |
| 30 | 4.89 | 5.13 | 5.25 | 5.70 | ..... | 5.40 | 4.94 | 4.70 | 4.29 | ..... |
| 31 | 4.89 | ..... | 5.22 | 5.90 | ..... | 5.38 | ..... | 4.68 | ..... | ..... |

NOTE.—Jan. 13–30, readings taken on gage on left bank; all other readings on gage on right bank.

*Daily discharge, in second-feet, of Putah Creek at Winters, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 13 | 46 | 86 | 290 | 82 | 128 | 50 | 19 | 1.0 |
| 2 | .0 | 13 | 44 | 88 | 269 | 82 | 122 | 49 | 18 | 1.0 |
| 3 | .0 | 14 | 44 | 86 | 249 | 80 | 120 | 47 | 16 | .5 |
| 4 | .0 | 14 | 42 | 76 | 233 | 80 | 120 | 47 | 15 | .5 |
| 5 | .0 | 14 | 42 | 71 | 226 | 75 | 305 | 44 | 13 | .5 |
| 6 | .0 | 24 | 41 | 64 | 215 | 73 | 455 | 39 | 12 | .5 |
| 7 | .5 | 910 | 39 | 62 | 204 | 71 | 293 | 35 | 11 | .0 |
| 8 | .5 | 280 | 39 | 66 | 193 | 67 | 237 | 34 | 10 | .0 |
| 9 | .5 | 171 | 38 | 71 | 183 | 64 | 194 | 34 | 8 | ..... |
| 10 | .5 | 840 | 36 | 132 | 169 | 62 | 181 | 37 | 7 | ..... |
| 11 | .5 | 306 | 33 | 113 | 166 | 60 | 169 | 44 | 7 | ..... |
| 12 | .5 | 228 | 30 | 106 | 157 | 60 | 142 | 44 | 6.5 | ..... |
| 13 | 1.0 | 171 | 28 | 3,880 | 147 | 58 | 142 | 44 | 6 | ..... |
| 14 | 1.5 | 137 | 34 | 8,080 | 138 | 56 | 133 | 42 | 6 | ..... |
| 15 | 2 | 113 | 41 | 6,410 | 132 | 54 | 125 | 41 | 5.5 | ..... |
| 16 | 2 | 137 | 372 | 3,880 | 129 | 52 | 120 | 39 | 4.5 | ..... |
| 17 | 2 | 113 | 525 | 2,700 | 124 | 52 | 115 | 38 | 4 | ..... |
| 18 | 2 | 100 | 284 | 7,240 | 118 | 94 | 103 | 35 | 3 | ..... |
| 19 | 2 | 88 | 228 | 3,580 | 110 | 157 | 101 | 35 | 4 | ..... |
| 20 | 2 | 86 | 185 | 1,800 | 107 | 157 | 98 | 31 | 4 | ..... |
| 21 | 2 | 86 | 162 | 1,240 | 104 | 144 | 90 | 28 | 4 | ..... |
| 22 | 2 | 88 | 137 | 950 | 102 | 166 | 85 | 26 | 3 | ..... |
| 23 | 2 | 83 | 116 | 755 | 102 | 490 | 79 | 24 | 2.5 | ..... |
| 24 | 5.5 | 76 | 110 | 665 | 107 | 400 | 75 | 23 | 2 | ..... |
| 25 | 10 | 64 | 106 | 580 | 110 | 310 | 69 | 21 | 2 | ..... |
| 26 | 12 | 62 | 96 | 530 | 104 | 253 | 61 | 19 | 1.5 | ..... |
| 27 | 12 | 62 | 88 | 430 | 102 | 218 | 58 | 19 | 1.5 | ..... |
| 28 | 12 | 58 | 83 | 820 | 92 | 184 | 52 | 24 | 1.5 | ..... |
| 29 | 13 | 54 | 81 | 342 | ..... | 166 | 52 | 23 | 1.5 | ..... |
| 30 | 13 | 50 | 76 | 319 | ..... | 160 | 52 | 21 | 1.5 | ..... |
| 31 | 13 | ..... | 69 | 319 | ..... | 154 | ..... | 19 | ..... | ..... |

NOTE.—Discharge determined from four rating curves, as follows: Oct. 1 to Jan. 12, fairly well defined; Jan. 13–28, poorly defined; Jan. 31 to Mar. 23, fairly well defined; Mar. 24 to July 8, well defined. Discharge Oct. 1–7, and Jan. 29 and 30, estimated. Creek dry July 9 to Sept. 30.

*Monthly discharge of Putah Creek at Winters, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run off in acre-feet. | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 13 | 0 | 3.68 | 226 | C. |
| November | 910 | 13 | 148 | 8,810 | B. |
| December | 525 | 28 | 106 | 6,520 | B. |
| January | 8,080 | 62 | 1,470 | 90,400 | D. |
| February | 290 | 92 | 156 | 8,660 | B. |
| March | 490 | 52 | 135 | 8,300 | C. |
| April | 455 | 52 | 136 | 8,090 | A. |
| May | 50 | 19 | 34.1 | 2,100 | A. |
| June | 19 | 1.5 | 6.68 | 397 | B. |
| July | 1 | 0 | .13 | 8 | C. |
| August | 0 | 0 | .0 | 0 | |
| September | 0 | 0 | .0 | 0 | |
| The year | 8,080 | 0 | 184 | 134,000 | |

## RUSSIAN RIVER BASIN.

### RUSSIAN RIVER NEAR UKIAH, CAL.

LOCATION.—At Bailey's bridge, in Yokayo grant, just above junction with East Fork, and 3 miles northeast of Ukiah.

RECORDS AVAILABLE.—August 18, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Painted on left abutment of bridge; vertical staff for low water fastened to pile under bridge.

CHANNEL.—Sand and gravel; shifts slightly at high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Russian River near Ukiah, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 15 | R. C. Rice | 7.47 | 1,290 | Mar. 28 | E. C. Murphy | 4.26 | 90 |
| Feb. 7 | E. C. Murphy | 4.22 | 83 | May 24 | do | 3.61 | 15 |
| 7 | do | 4.22 | 85 | Aug. 21 | Charles Leidl | 3.23 | .3 |
| Mar. 19 | do | 4.20 | 82 | | | | |

*Daily gage height, in feet, of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

[W. F. Lawrance, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.32 | 3.50 | 4.00 | 5.0 | 4.50 | 3.92 | 4.10 | 3.75 | 3.59 | 3.42 | 3.31 |
| 2 | 3.32 | 3.50 | 4.00 | 4.65 | 4.45 | 3.95 | 4.10 | 2.75 | 3.58 | 3.40 | 3.31 |
| 3 | 3.32 | 3.50 | 4.00 | 4.52 | 4.44 | 3.95 | 4.35 | 3.70 | 3.55 | 3.40 | 3.32 |
| 4 | 3.32 | 3.50 | 3.90 | 4.38 | 4.40 | 3.91 | 5.1 | 3.68 | 3.55 | 3.40 | 3.32 |
| 5 | 3.32 | 7.6 | 3.90 | 4.28 | 4.40 | 3.90 | 6.15 | 3.65 | 3.55 | 3.40 | 3.32 |
| 6 | 3.32 | 13.8 | 3.90 | 4.18 | 4.38 | 3.90 | 5.3 | 3.65 | 3.55 | 3.40 | 3.32 |
| 7 | 3.32 | 6.7 | 3.90 | 4.15 | 4.22 | 3.85 | 4.80 | 3.65 | 3.54 | 3.39 | 3.31 |
| 8 | 3.32 | 5.25 | 3.90 | 4.80 | 4.22 | 3.85 | 4.65 | 3.65 | 3.52 | 3.38 | 3.31 |
| 9 | 3.32 | 5.6 | 3.90 | 4.96 | 4.22 | 3.85 | 4.50 | 3.62 | 3.52 | 3.38 | 3.31 |
| 10 | 3.32 | 6.45 | 3.90 | 4.82 | 4.21 | 3.85 | 4.42 | 3.60 | 3.52 | 3.38 | 3.31 |
| 11 | 3.32 | 5.65 | 3.90 | 4.75 | 4.21 | 3.85 | 4.32 | 3.60 | 3.52 | 3.36 | ..... |
| 12 | 3.32 | 5.1 | 3.80 | 10.2 | 4.10 | 3.82 | 4.30 | 3.60 | 3.51 | 3.34 | ..... |
| 13 | 3.32 | 5.0 | 3.80 | 9.5 | 4.10 | 3.82 | 4.35 | 3.60 | 3.50 | 3.36 | ..... |
| 14 | 3.32 | 5.15 | 5.5 | 8.6 | 4.00 | 3.82 | 4.30 | 3.65 | 3.50 | 3.35 | ..... |
| 15 | 3.32 | 4.95 | 7.2 | 8.5 | 4.00 | 3.80 | 4.22 | 3.7 | 3.48 | 3.35 | ..... |
| 16 | 3.32 | 4.70 | 11.6 | 8.4 | 4.00 | 3.80 | 4.12 | 3.70 | 3.48 | 3.35 | ..... |
| 17 | 3.35 | 4.55 | 6.5 | 7.6 | 4.00 | 3.80 | 4.10 | 3.65 | 3.45 | 3.32 | ..... |
| 18 | 3.35 | 4.40 | 5.55 | 11.6 | 4.00 | 4.50 | 4.10 | 3.70 | 3.48 | 3.32 | ..... |
| 19 | 3.35 | 5.3 | 5.15 | 7.4 | 3.99 | 4.15 | 4.00 | 3.70 | 3.50 | 3.31 | ..... |
| 20 | 3.35 | 5.1 | 4.75 | 6.35 | 3.98 | 4.05 | 4.00 | 3.65 | 3.48 | 3.31 | ..... |
| 21 | 3.35 | 4.75 | 4.55 | 5.5 | 3.95 | 4.10 | 3.92 | 3.65 | 3.48 | 3.30 | ..... |
| 22 | 3.40 | 4.55 | 4.48 | 5.9 | 3.95 | 5.20 | 3.99 | 3.65 | 3.48 | 3.32 | ..... |
| 23 | 3.40 | 4.40 | 4.40 | 5.4 | 3.95 | 4.85 | 3.90 | 3.65 | 3.48 | 3.35 | ..... |
| 24 | 3.48 | 4.30 | 4.28 | 5.2 | 3.72 | 4.75 | 3.90 | 3.62 | 3.48 | 3.36 | ..... |
| 25 | 3.48 | 4.30 | 4.21 | 5.05 | 3.95 | 4.60 | 3.82 | 3.60 | 3.48 | 3.32 | ..... |
| 26 | 3.48 | 4.30 | 4.12 | 4.95 | 3.95 | 4.45 | 3.80 | 3.60 | 3.46 | 3.32 | ..... |
| 27 | 3.50 | 4.25 | 4.05 | 4.90 | 3.92 | 4.18 | 3.80 | 3.64 | 3.45 | 3.32 | ..... |
| 28 | 3.50 | 4.20 | 3.95 | 4.80 | 3.92 | 4.22 | 3.80 | 3.64 | 3.45 | 3.32 | ..... |
| 29 | 3.50 | 4.10 | 3.98 | 4.65 | ..... | 4.18 | 3.80 | 3.62 | 3.45 | 3.34 | ..... |
| 30 | 3.50 | 4.10 | 4.65 | 4.52 | ..... | 4.15 | 3.80 | 3.60 | 3.45 | 3.34 | ..... |
| 31 | 3.50 | ..... | 4.90 | 4.52 | ..... | 4.12 | ..... | 3.60 | ..... | 3.34 | ..... |

NOTE.—A small pumping plant on right bank about 150 feet above gage was operated intermittently during October, 1912. Observer stated this operation lowered water on gage 0.2 foot.

Maximum observed gage heights: Nov. 6, 1912, 18.2 feet at 8 a. m.; Dec. 16, 1912, 14.6 feet at 7 a. m.

*Daily discharge, in second-feet, of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 8 | 50 | 260 | 136 | 40 | 64 | 24 | 12 | 4 | 1 |
| 2 | 2 | 8 | 50 | 170 | 126 | 44 | 64 | 24 | 12 | 3 | 1 |
| 3 | 2 | 8 | 50 | 140 | 124 | 44 | 107 | 20 | 10 | 3 | 1 |
| 4 | 2 | 8 | 38 | 112 | 116 | 39 | 290 | 19 | 10 | 3 | 1 |
| 5 | 2 | 1,530 | 38 | 94 | 116 | 38 | 660 | 16 | 10 | 3 | 1 |
| 6 | 2 | 5,570 | 38 | 77 | 112 | 38 | 352 | 16 | 10 | 3 | 1 |
| 7 | 2 | 895 | 38 | 72 | 84 | 33 | 206 | 16 | 9 | 3 | 1 |
| 8 | 2 | 336 | 38 | 206 | 84 | 33 | 170 | 16 | 8 | 3 | 1 |
| 9 | 2 | 452 | 38 | 249 | 84 | 33 | 136 | 14 | 8 | 3 | 1 |
| 10 | 2 | 782 | 38 | 211 | 82 | 33 | 120 | 13 | 8 | 3 | 1 |
| 11 | 2 | 470 | 38 | 194 | 82 | 33 | 102 | 13 | 8 | 2 | ..... |
| 12 | 2 | 290 | 28 | 3,050 | 64 | 30 | 98 | 13 | 8 | 2 | ..... |
| 13 | 2 | 260 | 28 | 2,560 | 64 | 30 | 107 | 13 | 7 | 2 | ..... |
| 14 | 2 | 305 | 418 | 1,980 | 50 | 30 | 98 | 16 | 7 | 2 | ..... |
| 15 | 2 | 246 | 1,140 | 1,910 | 50 | 28 | 84 | 20 | 6 | 2 | ..... |
| 16 | 2 | 182 | 4,030 | 1,840 | 50 | 28 | 67 | 20 | 6 | 2 | ..... |
| 17 | 2 | 147 | 805 | 1,360 | 50 | 28 | 64 | 16 | 5 | 1 | ..... |
| 18 | 2 | 116 | 435 | 4,030 | 50 | 136 | 64 | 20 | 6 | 1 | ..... |
| 19 | 2 | 352 | 305 | 1,250 | 49 | 72 | 50 | 20 | 7 | 1 | ..... |
| 20 | 2 | 290 | 194 | 740 | 48 | 57 | 50 | 16 | 6 | 1 | ..... |
| 21 | 2 | 194 | 147 | 418 | 44 | 64 | 40 | 16 | 6 | 1 | ..... |
| 22 | 4 | 147 | 132 | 562 | 44 | 320 | 38 | 16 | 6 | 1 | ..... |
| 23 | 4 | 116 | 116 | 384 | 44 | 219 | 38 | 16 | 6 | 2 | ..... |
| 24 | 7 | 98 | 94 | 320 | 22 | 194 | 38 | 14 | 6 | 2 | ..... |
| 25 | 7 | 98 | 82 | 275 | 44 | 158 | 30 | 13 | 6 | 1 | ..... |
| 26 | 7 | 98 | 67 | 246 | 44 | 126 | 28 | 13 | 5 | 1 | ..... |
| 27 | 8 | 89 | 57 | 232 | 40 | 77 | 28 | 16 | 5 | 1 | ..... |
| 28 | 8 | 80 | 44 | 206 | 40 | 84 | 28 | 16 | 5 | 1 | ..... |
| 29 | 8 | 64 | 48 | 170 | ..... | 77 | 28 | 14 | 5 | 2 | ..... |
| 30 | 8 | 64 | 170 | 140 | ..... | 72 | 28 | 13 | 5 | 2 | ..... |
| 31 | 8 | ..... | 232 | 140 | ..... | 67 | ..... | 13 | ..... | 2 | ..... |

NOTE.—Daily discharge determined from two fairly well defined rating curves applicable as follows: Oct. 1 to Nov. 6 (same as used 1911 to Sept. 30, 1912), and Nov. 7 to Aug. 10.

*Monthly discharge of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 8 | 2 | 3.6 | 221 | D. |
| November | 5,570 | 8 | 443 | 26,400 | C. |
| December | 4,030 | 28 | 291 | 17,900 | B. |
| January | 4,030 | 72 | 761 | 46,800 | B. |
| February | 136 | 22 | 69.4 | 3,850 | B. |
| March | 320 | 28 | 74.2 | 4,560 | B. |
| April | 660 | 28 | 109 | 6,490 | B. |
| May | 24 | 13 | 16.3 | 1,000 | C. |
| June | 12 | 5 | 7.3 | 434 | D. |
| July | 4 | 1 | 2.0 | 123 | D. |
| August 1–10 | 1 | 1 | 1.0 | 20 | D. |
| The period | ..... | ..... | ..... | 108,000 | |

## RUSSIAN RIVER AT GEYSERVILLE, CAL.

LOCATION.—At highway bridge, in Tzabaco grant, half a mile northeast of Geyserville.

RECORDS AVAILABLE.—December 5, 1910, to August 31, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Painted on lower caisson of sixth pier from right end of bridge; for low water, vertical staff fastened to planking between caissons.

CHANNEL.—Gravel; smooth. Section shifts during high water. Overflow section on left bank.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—See East Fork of Russian River near Ukiah.

ACCURACY.—Results fair. High water usually causes a change in the channel, and it has been necessary to use several rating curves, which are fairly well defined, except at high stages.

*Discharge measurements of Russian River at Geyserville, Cal., for the years 1910–1913.*

| Date. | Made by— | Gage height. (a) | Gage height. (b) | Discharge. | Date. | Made by— | Gage height. (a) | Gage height. (b) | Discharge. |
|---|---|---|---|---|---|---|---|---|---|
| 1910 | | *Feet.* | *Feet.* | *Sec.-ft.* | 1912 | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Dec. 4 | W. V. Hardy | 10.04 | ..... | 354 | Apr. 6 | R. C. Rice | ..... | 9.68 | 501 |
| 1911 | | | | | Aug. 13 | J. E. Stewart | ..... | 8.91 | 18 |
| Mar. 4 | J. E. Stewart | 11.00 | 10.8 | 2,680 | Dec. 14 | R. C. Rice | ..... | 9.47 | 232 |
| June 24 | E. A. Ingham | 9.40 | ..... | 213 | 1913 | | | | |
| July 22 | ....do | 8.95 | ..... | 52 | Feb. 6 | E. C. Murphy | 9.97 | 9.76 | 753 |
| Aug. 18 | E. O. Christiansen | 8.62 | ..... | 2 | 9 | ....do | 9.92 | 9.71 | 657 |
| Oct. 29 | ....do | 8.63 | ..... | 10 | Mar. 18 | ....do | 9.96 | 9.75 | 708 |
| Nov. 24 | Stanley and Whipple | 8.85 | ..... | 40 | May 23 | ....do | ..... | 9.39 | 327 |
| 1912 | | | | | Aug. 21 | Charles Leidl | ..... | ..... | Dry. |
| Jan. 28 | R. C. Rice | 10.69 | 10.49 | 2,000 | 29 | Beckell | ..... | ..... | Dry. |
| Mar. 5 | ....do | ..... | 9.59 | 503 | | | | | |

(a) Read on gage painted on caisson. (b) Read on low-water staff gage.

NOTE.—Aug. 21, 1913, approximate gage height of zero flow, 8.3±0.2 feet.

*Daily gage height, in feet, of Russian River at Geyserville, Cal., for the years ending Sept. 30, 1912–13.*

[R. E. Smith and Edgar Smith, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12 | | | | | | | | | | | | |
| 1 | 8.10 | 8.58 | 8.88 | 9.10 | 9.95 | 9.78 | 9.73 | 11.3 | 9.68 | 9.33 | 9.01 | 8.53 |
| 2 | 8.10 | 8.60 | 8.88 | 9.10 | 9.90 | 9.78 | 9.71 | 11.1 | 9.67 | 9.31 | 9.01 | 8.33 |
| 3 | 8.15 | 8.60 | 8.88 | 9.10 | 9.85 | 9.78 | 9.68 | 10.8 | 9.65 | 8.31 | 8.98 | 8.13 |
| 4 | 8.12 | 8.62 | 8.90 | 9.08 | 9.80 | 9.80 | 9.68 | 10.65 | 9.65 | 9.31 | 8.95 | 8.13 |
| 5 | 8.12 | 8.62 | 8.90 | 9.08 | 9.78 | 9.86 | 9.68 | 10.30 | 9.65 | 9.31 | 8.93 | 7.98 |
| 6 | 8.10 | 8.65 | 8.90 | 9.08 | 9.75 | 10.5 | 9.68 | 10.15 | 9.68 | 9.31 | 8.93 | 9.51 |
| 7 | 8.10 | 8.65 | 8.92 | 9.08 | 9.72 | 10.7 | 9.68 | 10.08 | 9.68 | 9.28 | 8.93 | 9.41 |
| 8 | 8.20 | 8.65 | 8.95 | 9.10 | 9.72 | 10.5 | 9.71 | 10.05 | 9.53 | 9.28 | 9.01 | 9.38 |
| 9 | 8.50 | 8.68 | 8.98 | 9.10 | 9.80 | 10.03 | 9.71 | 9.93 | 9.53 | 9.25 | 9.01 | 9.31 |
| 10 | 8.50 | 8.68 | 8.98 | 9.08 | 9.80 | 10.01 | 9.72 | 9.88 | 9.55 | 9.23 | 9.01 | 9.33 |
| 11 | 8.55 | 8.68 | 8.98 | 9.18 | 9.80 | 9.98 | 9.98 | 9.83 | 9.55 | 9.23 | 8.95 | 9.23 |
| 12 | 8.55 | 8.70 | 8.98 | 9.55 | 9.82 | 12.0 | 10.11 | 9.81 | 9.55 | 9.23 | 8.95 | 9.21 |
| 13 | 8.60 | 8.72 | 8.95 | 9.55 | 9.82 | 11.4 | 9.88 | 9.81 | 9.55 | 9.18 | 8.91 | 9.18 |
| 14 | 8.70 | 8.72 | 8.95 | 9.52 | 9.85 | 11.4 | 9.75 | 9.81 | 9.55 | 9.18 | 8.91 | 9.15 |
| 15 | 8.68 | 8.72 | 8.95 | 9.52 | 9.85 | 11.3 | 9.73 | 9.78 | 9.55 | 9.18 | 8.88 | 9.13 |
| 16 | 8.55 | 8.78 | 8.95 | 9.58 | 9.90 | 11.8 | 9.73 | 9.75 | 9.53 | 9.15 | 8.88 | 9.13 |
| 17 | 8.65 | 8.80 | 8.98 | 9.60 | 9.90 | 11.1 | 9.71 | 9.73 | 9.53 | 9.13 | 8.88 | 9.11 |
| 18 | 8.65 | 8.80 | 8.98 | 9.72 | 10.38 | 10.8 | 9.68 | 9.71 | 9.53 | 9.13 | 8.85 | 9.11 |
| 19 | 8.62 | 8.82 | 8.95 | 10.00 | 10.15 | 10.5 | 9.65 | 9.71 | 9.51 | 9.13 | 8.85 | 9.11 |
| 20 | 8.62 | 8.82 | 8.95 | 9.90 | 10.00 | 10.3 | 9.65 | 9.71 | 9.51 | 9.11 | 8.83 | 9.11 |
| 21 | 8.62 | 8.85 | 8.95 | 9.80 | 9.90 | 10.18 | 9.65 | 9.71 | 9.48 | 9.11 | 8.83 | 9.11 |
| 22 | 8.60 | 8.88 | 8.95 | 9.50 | 9.80 | 10.15 | 9.65 | 9.71 | 9.45 | 9.11 | 8.81 | 9.08 |
| 23 | 8.68 | 8.88 | 8.95 | 9.60 | 9.75 | 10.03 | 9.65 | 9.71 | 9.45 | 9.08 | 8.78 | 9.05 |
| 24 | 8.58 | 8.88 | 8.95 | 9.80 | 9.72 | 10.03 | 9.68 | 9.71 | 9.45 | 9.05 | 8.78 | 9.03 |
| 25 | 8.50 | 8.88 | 8.98 | 11.9 | 9.72 | 9.93 | 9.68 | 9.73 | 9.45 | 9.05 | 8.75 | 9.01 |
| 26 | 8.50 | 8.88 | 8.98 | 13.3 | 9.70 | 9.93 | 9.68 | 9.73 | 9.43 | 9.05 | 8.75 | 8.98 |
| 27 | 8.50 | 8.85 | 8.98 | 11.3 | 9.70 | 9.93 | 9.68 | 9.75 | 9.41 | 9.05 | 8.73 | 8.98 |
| 28 | 8.52 | 8.88 | 9.00 | 10.6 | 9.75 | 9.91 | 9.93 | 9.73 | 9.38 | 9.05 | 8.71 | 8.95 |
| 29 | 8.55 | 8.88 | 9.02 | 10.35 | 9.75 | 9.91 | 10.7 | 9.71 | 9.38 | 9.03 | 8.71 | 8.95 |
| 30 | 8.55 | 8.88 | 9.02 | 10.20 | ..... | 9.91 | 10.85 | 9.68 | 9.35 | 9.03 | 8.63 | 8.95 |
| 31 | 8.52 | ..... | 9.10 | 10.00 | ..... | 9.83 | ..... | 9.68 | ..... | 9.01 | 8.58 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13 | | | | | | | | | | | |
| 1 | 8.95 | 9.11 | 9.63 | 10.19 | 9.94 | 9.54 | 9.62 | 9.49 | 9.39 | 8.92 | 8.74 |
| 2 | 8.95 | 9.13 | 9.58 | 9.96 | 9.89 | 9.56 | 9.62 | 9.49 | 9.39 | 8.92 | 8.74 |
| 3 | 8.93 | 9.13 | 9.53 | 9.86 | 9.84 | 9.56 | 9.62 | 9.49 | 9.36 | 8.89 | 8.74 |
| 4 | 8.93 | 9.13 | 9.51 | 9.84 | 9.82 | 9.44 | 9.92 | 9.49 | 9.32 | 8.89 | 8.72 |
| 5 | 8.91 | 9.15 | 9.51 | 9.82 | 9.79 | 9.52 | 10.5 | 9.49 | 9.29 | 8.89 | 8.69 |
| 6 | 8.91 | 12.2 | 9.51 | 9.74 | 9.76 | 9.52 | 10.40 | 9.46 | 9.29 | 8.89 | 8.69 |
| 7 | 8.83 | 10.8 | 9.48 | 9.72 | 9.76 | 9.49 | 10.14 | 9.46 | 9.26 | 8.86 | 8.69 |
| 8 | 8.85 | 10.5 | 9.45 | 9.76 | 9.74 | 9.49 | 10.04 | 9.49 | 9.24 | 8.86 | 8.69 |
| 9 | 8.88 | 10.9 | 9.43 | 10.29 | 9.66 | 9.46 | 9.94 | 9.52 | 9.24 | 8.86 | 8.72 |
| 10 | 8.85 | 10.8 | 9.41 | 10.09 | 9.64 | 9.46 | 9.89 | 9.46 | 9.16 | 8.86 | 8.72 |
| 11 | 8.83 | 10.40 | 9.41 | 10.02 | 9.62 | 9.46 | 9.84 | 9.46 | 9.14 | 8.84 | 8.69 |
| 12 | 8.81 | 10.06 | 9.38 | 11.6 | 9.62 | 9.44 | 9.76 | 9.46 | 9.14 | 8.72 | 8.66 |
| 13 | 8.81 | 9.93 | 9.38 | 14.2 | 9.59 | 9.44 | 9.82 | 9.44 | 9.14 | 8.69 | 8.64 |
| 14 | 8.75 | 9.98 | 9.49 | 15.0 | 9.59 | 9.42 | 9.74 | 9.44 | 9.14 | 8.66 | 8.59 |
| 15 | 8.75 | 9.93 | 11.7 | 14.7 | 9.59 | 9.42 | 9.72 | 9.42 | 9.09 | 8.64 | 8.56 |
| 16 | 8.73 | 9.93 | 12.2 | 13.5 | 9.54 | 9.42 | 9.69 | 9.42 | 9.06 | 8.64 | 8.54 |
| 17 | 8.73 | 9.91 | 11.8 | 12.8 | 9.54 | 9.42 | 9.64 | 9.42 | 9.04 | 8.62 | 8.52 |
| 18 | 8.71 | 9.88 | 10.8 | 15.4 | 9.54 | 9.74 | 9.64 | 9.46 | 9.04 | 8.62 | 8.52 |
| 19 | 8.71 | 9.83 | 10.40 | 13.3 | 9.54 | 9.74 | 9.64 | 9.42 | 9.04 | 8.64 | 8.46 |
| 20 | 8.73 | 10.18 | 10.26 | 11.8 | 9.54 | 9.54 | 9.62 | 9.39 | 9.06 | 8.64 | 8.39 |
| 21 | 8.75 | 10.11 | 10.14 | 11.3 | 9.54 | 9.59 | 9.62 | 9.39 | 9.09 | 8.64 | 8.39 |
| 22 | 8.78 | 9.91 | 10.12 | 10.9 | 9.54 | 10.24 | 9.62 | 9.36 | 9.06 | 8.64 | 8.45 |
| 23 | 8.83 | 9.81 | 9.94 | 10.7 | 9.54 | 10.14 | 9.59 | 9.36 | 9.05 | 8.64 | 8.40 |
| 24 | 8.85 | 9.75 | 9.89 | 10.5 | 9.56 | 10.14 | 9.56 | 9.34 | 8.99 | 8.66 | 8.30 |
| 25 | 8.93 | 9.75 | 9.86 | 10.45 | 9.56 | 9.89 | 9.54 | 9.34 | 8.99 | 8.66 | 8.25 |
| 26 | 8.98 | 9.73 | 9.84 | 10.34 | 9.54 | 9.84 | 9.54 | 9.32 | 8.96 | 8.66 | 8.20 |
| 27 | 9.03 | 9.71 | 9.82 | 10.24 | 9.56 | 9.82 | 9.52 | 9.34 | 8.96 | 8.69 | 8.10 |
| 28 | 9.05 | 9.68 | 9.79 | 10.16 | 9.56 | 9.76 | 9.49 | 9.34 | 8.94 | 8.72 | 8.05 |
| 29 | 9.08 | 9.65 | 9.79 | 10.09 | ..... | 9.74 | 9.49 | 9.36 | 8.94 | 8.72 | 8.00 |
| 30 | 9.08 | 9.65 | 9.76 | 10.04 | ..... | 9.64 | 9.49 | 9.36 | 8.94 | 8.72 | 8.00 |
| 31 | 9.05 | ..... | 9.94 | 9.96 | ..... | 9.64 | ..... | 9.39 | ..... | 8.74 | ..... |

NOTE.—From Mar. 5, 1912, gage heights below 10.5 feet have been recorrected for error in gage and supersede those published in Water Supply Paper 300 (p. 782) and Water Supply Paper 331 (p. 342). All gage heights 1911 to 1913 above 10.5 feet have been corrected −0.2 foot for effect from back water observed on gage painted on cylinder. Gage height Dec. 4, 1910, previously published as 10.4 feet, corrected to 10.04 feet. Gage height June 1, 1911, previously published as 9.1 feet, corrected to 9.5 feet.

*Daily discharge, in second-feet, of Russian River at Geyserville, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | | | | | | |
| 1 | 7,040 | 1,400 | 932 | 650 | 282 | 192 | 22 | 0 |
| 2 | 7,040 | 1,400 | 844 | 650 | 282 | 192 | 19 | 0 |
| 3 | 4,610 | 2,020 | 844 | 604 | 335 | 192 | 18 | 0 |
| 4 | 3,860 | 2,680 | 1,020 | 528 | 335 | 187 | 19 | 0 |
| 5 | 2,680 | 12,400 | 2,680 | 528 | 335 | 187 | 12 | 0 |
| 6 | 2,680 | 16,500 | 2,020 | 528 | 335 | 187 | 12 | 0 |
| 7 | 2,240 | 13,000 | 1,600 | 514 | 212 | 187 | 11 | 0 |
| 8 | 1,920 | 9,370 | 1,600 | 500 | 212 | 187 | 11 | 0 |
| 9 | 1,810 | 5,930 | 1,700 | 500 | 212 | 182 | 11 | 0 |
| 10 | 2,240 | 4,610 | 1,600 | 500 | 212 | 182 | 9 | 0 |
| 11 | 7,900 | 3,380 | 1,500 | 458 | 212 | 177 | 8 | 0 |
| 12 | 5,130 | 2,680 | 1,500 | 458 | 212 | 177 | 8 | 0 |
| 13 | 7,320 | 2,240 | 1,400 | 458 | 207 | 162 | 8 | 0 |
| 14 | 4,360 | 1,920 | 1,300 | 458 | 207 | 162 | 7 | 0 |
| 15 | 3,140 | 1,810 | 1,210 | 458 | 207 | 153 | 5 | 0 |
| 16 | 2,680 | 2,020 | 1,300 | 458 | 207 | 141 | 5 | 0 |
| 17 | 2,240 | 1,810 | 1,120 | 528 | 207 | 141 | 5 | 0 |
| 18 | 1,810 | 1,700 | 1,020 | 680 | 207 | 103 | 5 | 0 |
| 19 | 1,810 | 1,400 | 1,020 | 680 | 207 | 86 | 3 | 0 |
| 20 | 2,020 | 1,400 | 1,020 | 680 | 207 | 73 | 2 | 0 |
| 21 | 1,920 | 1,400 | 932 | 680 | 202 | 60 | 2 | 0 |
| 22 | 1,920 | 1,300 | 932 | 604 | 202 | 50 | 2 | 0 |
| 23 | 1,810 | 1,300 | 932 | 604 | 202 | 46 | 1 | 0 |
| 24 | 1,700 | 1,210 | 844 | 604 | 202 | 40 | 1 | 0 |
| 25 | 1,600 | 1,210 | 844 | 528 | 202 | 37 | 1 | 0 |
| 26 | 1,600 | 1,210 | 680 | 528 | 202 | 32 | 1 | 0 |
| 27 | 1,400 | 1,120 | 844 | 528 | 202 | 29 | 0 | 0 |
| 28 | 1,400 | 1,120 | 762 | 458 | 197 | 24 | 0 | 0 |
| 29 | ..... | 1,020 | 762 | 458 | 197 | 24 | 0 | 0 |
| 30 | ..... | 932 | 680 | 458 | 192 | 24 | 0 | 0 |
| 31 | ..... | 932 | ..... | 282 | ..... | 23 | 0 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 0 | 4 | 37 | 86 | 995 | 754 | 574 | 3,860 | 500 | 151 | 37 | 0 |
| 2 | 0 | 5 | 37 | 86 | 920 | 754 | 543 | 3,380 | 486 | 138 | 37 | 0 |
| 3 | 0 | 5 | 37 | 86 | 850 | 754 | 500 | 2,680 | 458 | 138 | 30 | 0 |
| 4 | 0 | 6 | 40 | 81 | 780 | 780 | 500 | 2,350 | 458 | 138 | 25 | 0 |
| 5 | 0 | 6 | 40 | 81 | 754 | 864 | 500 | 1,600 | 458 | 138 | 21 | 0 |
| 6 | 0 | 8 | 40 | 81 | 715 | 2,020 | 500 | 1,300 | 500 | 138 | 21 | 289 |
| 7 | 0 | 8 | 44 | 81 | 676 | 2,460 | 500 | 1,170 | 500 | 124 | 21 | 204 |
| 8 | 0 | 8 | 50 | 86 | 676 | 2,020 | 543 | 1,120 | 311 | 124 | 37 | 183 |
| 9 | 1 | 11 | 56 | 86 | 780 | 1,120 | 543 | 897 | 311 | 112 | 37 | 138 |
| 10 | 1 | 11 | 56 | 81 | 780 | 1,090 | 558 | 811 | 333 | 104 | 37 | 153 |
| 11 | 3 | 11 | 56 | 113 | 780 | 1,040 | 985 | 729 | 333 | 104 | 25 | 104 |
| 12 | 3 | 12 | 56 | 335 | 808 | 5,660 | 1,230 | 696 | 333 | 104 | 25 | 96 |
| 13 | 5 | 14 | 50 | 335 | 808 | 4,110 | 811 | 696 | 333 | 86 | 18 | 86 |
| 14 | 12 | 14 | 50 | 303 | 850 | 4,110 | 604 | 696 | 333 | 86 | 18 | 76 |
| 15 | 11 | 14 | 50 | 303 | 850 | 3,860 | 574 | 650 | 333 | 86 | 14 | 70 |
| 16 | 3 | 22 | 50 | 367 | 920 | 5,130 | 574 | 604 | 311 | 76 | 14 | 70 |
| 17 | 8 | 24 | 56 | 388 | 920 | 3,380 | 543 | 574 | 311 | 70 | 14 | 63 |
| 18 | 8 | 24 | 56 | 558 | 1,770 | 2,680 | 500 | 543 | 311 | 70 | 11 | 63 |
| 19 | 6 | 27 | 50 | 1,020 | 1,330 | 2,020 | 458 | 543 | 289 | 70 | 11 | 63 |
| 20 | 6 | 27 | 50 | 844 | 1,070 | 1,600 | 458 | 543 | 289 | 63 | 9 | 63 |
| 21 | 6 | 32 | 50 | 680 | 920 | 1,360 | 458 | 543 | 262 | 63 | 9 | 63 |
| 22 | 5 | 37 | 50 | 282 | 780 | 1,300 | 458 | 543 | 237 | 63 | 7 | 55 |
| 23 | 11 | 37 | 50 | 388 | 715 | 1,080 | 458 | 543 | 237 | 55 | 5 | 47 |
| 24 | 4 | 37 | 50 | 680 | 676 | 1,080 | 500 | 543 | 237 | 47 | 5 | 42 |
| 25 | 1 | 37 | 56 | 5,490 | 676 | 897 | 500 | 574 | 237 | 47 | 3 | 37 |
| 26 | 1 | 37 | 56 | 9,370 | 650 | 897 | 500 | 574 | 221 | 47 | 3 | 30 |
| 27 | 1 | 32 | 56 | 3,860 | 650 | 897 | 500 | 604 | 204 | 47 | 2 | 30 |
| 28 | 2 | 37 | 60 | 2,240 | 715 | 862 | 897 | 574 | 183 | 47 | 0 | 25 |
| 29 | 3 | 37 | 65 | 1,710 | 715 | 862 | 2,460 | 543 | 183 | 42 | 0 | 25 |
| 30 | 3 | 37 | 65 | 1,420 | ..... | 862 | 2,800 | 500 | 164 | 42 | 0 | 25 |
| 31 | 2 | ..... | 86 | 1,070 | ..... | 729 | ..... | 500 | ..... | 37 | 0 | ..... |

*Daily discharge, in second-feet, of Russian River at Geyserville, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 25 | 63 | 430 | 1,380 | 980 | 467 | 554 | 416 | 327 | 76 | 37 |
| 2 | 25 | 70 | 366 | 950 | 906 | 488 | 554 | 416 | 327 | 76 | 37 |
| 3 | 21 | 70 | 311 | 778 | 836 | 488 | 554 | 416 | 303 | 68 | 37 |
| 4 | 21 | 70 | 289 | 746 | 808 | 371 | 950 | 416 | 271 | 68 | 33 |
| 5 | 18 | 76 | 289 | 713 | 767 | 446 | 2,020 | 416 | 248 | 68 | 29 |
| 6 | 18 | 6,200 | 289 | 589 | 728 | 446 | 1,810 | 389 | 248 | 68 | 29 |
| 7 | 9 | 2,680 | 262 | 558 | 728 | 416 | 1,310 | 389 | 229 | 61 | 29 |
| 8 | 11 | 2,020 | 237 | 619 | 702 | 416 | 1,140 | 416 | 216 | 61 | 29 |
| 9 | 14 | 2,910 | 221 | 1,580 | 602 | 389 | 980 | 446 | 216 | 61 | 33 |
| 10 | 11 | 2,680 | 204 | 1,190 | 578 | 389 | 906 | 389 | 170 | 61 | 33 |
| 11 | 9 | 1,810 | 204 | 1,060 | 554 | 389 | 836 | 389 | 160 | 56 | 29 |
| 12 | 7 | 1,130 | 183 | 4,610 | 554 | 371 | 728 | 389 | 160 | 33 | 25 |
| 13 | 7 | 897 | 183 | 12,100 | 520 | 371 | 808 | 371 | 160 | 29 | 23 |
| 14 | 3 | 985 | 270 | 14,600 | 520 | 353 | 702 | 371 | 160 | 25 | 17 |
| 15 | 3 | 897 | 4,870 | 13,600 | 520 | 353 | 676 | 353 | 136 | 23 | 14 |
| 16 | 2 | 897 | 6,200 | 9,970 | 467 | 353 | 638 | 353 | 124 | 23 | 13 |
| 17 | 2 | 862 | 5,130 | 7,900 | 467 | 353 | 578 | 353 | 116 | 20 | 11 |
| 18 | 1 | 811 | 2,680 | 15,900 | 467 | 702 | 578 | 389 | 116 | 20 | 11 |
| 19 | 1 | 729 | 1,810 | 9,370 | 467 | 702 | 578 | 353 | 116 | 23 | 7 |
| 20 | 2 | 1,360 | 1,520 | 5,130 | 467 | 467 | 554 | 327 | 124 | 23 | 3 |
| 21 | 3 | 1,230 | 1,290 | 3,860 | 467 | 520 | 554 | 327 | 136 | 23 | 3 |
| 22 | 5 | 862 | 1,250 | 2,910 | 467 | 1,500 | 554 | 303 | 124 | 23 | 6 |
| 23 | 9 | 696 | 914 | 2,460 | 467 | 1,310 | 520 | 303 | 120 | 23 | 3 |
| 24 | 11 | 604 | 828 | 2,020 | 488 | 1,310 | 488 | 287 | 97 | 25 | 0 |
| 25 | 21 | 604 | 778 | 1,920 | 488 | 906 | 467 | 287 | 97 | 25 | 0 |
| 26 | 30 | 574 | 746 | 1,690 | 467 | 836 | 467 | 271 | 88 | 25 | 0 |
| 27 | 42 | 543 | 713 | 1,500 | 488 | 808 | 446 | 287 | 88 | 29 | 0 |
| 28 | 47 | 500 | 665 | 1,350 | 488 | 728 | 416 | 287 | 82 | 33 | 0 |
| 29 | 55 | 458 | 665 | 1,220 | ..... | 702 | 416 | 303 | 82 | 33 | 0 |
| 30 | 55 | 458 | 619 | 1,140 | ..... | 578 | 416 | 303 | 82 | 33 | 0 |
| 31 | 47 | ..... | 914 | 1,010 | ..... | 578 | ..... | 327 | ..... | 37 | 0 |

NOTE.—Daily discharge determined from rating curves applicable as follows: Feb. 1, 1911, to Jan. 26, 1912, fairly well defined below 4,000 second-feet; Jan. 27 to Mar. 12, 1912, and Jan. 19 to Aug. 31, 1913, poorly defined; Mar. 13, 1912, to Jan. 18, 1913, poorly defined.

*Monthly discharge of Russian River at Geyserville, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| February | 7,900 | 1,400 | 3,140 | 174,000 | C. |
| March | 16,500 | 932 | 3,300 | 203,000 | D. |
| April | 2,680 | 680 | 1,180 | 70,200 | C. |
| May | 680 | 282 | 534 | 32,800 | C. |
| June | 335 | 192 | 228 | 13,600 | C. |
| July | 192 | 23 | 117 | 7,190 | C. |
| August | 22 | 0 | 6.7 | 412 | D. |
| September | 0 | 0 | 0 | 0 | |
| The period | ..... | ..... | ..... | 501,000 | |
| 1911–12. | | | | | |
| October | 12 | 0 | 3.4 | 209 | D. |
| November | 37 | 4 | 20.7 | 1,230 | D. |
| December | 86 | 37 | 51.8 | 3,180 | D. |
| January | 9,370 | 81 | 1,050 | 64,600 | D. |
| February | 1,770 | 650 | 846 | 48,700 | C. |
| March | 5,660 | 729 | 1,840 | 113,000 | C. |
| April | 2,800 | 458 | 718 | 42,700 | C. |
| May | 3,860 | 500 | 1,020 | 62,700 | C. |
| June | 500 | 164 | 322 | 19,200 | C. |
| July | 151 | 37 | 85.7 | 5,270 | D. |
| August | 37 | 0 | 16.0 | 984 | D. |
| September | 289 | 0 | 70.0 | 4,160 | D. |
| The year | 9,370 | 0 | 504 | 366,000 | |

*Monthly discharge of Russian River at Geyserville, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912-13. | | | | | |
| October | 55 | 1 | 16.9 | 1,040 | D. |
| November | 6,200 | 63 | 1,120 | 66,600 | D. |
| December | 6,200 | 183 | 1,140 | 70,100 | C. |
| January | 15,900 | 558 | 4,010 | 247,000 | D. |
| February | 980 | 467 | 588 | 32,700 | C. |
| March | 1,500 | 353 | 597 | 36,700 | C. |
| April | 2,020 | 416 | 740 | 44,000 | C. |
| May | 446 | 271 | 356 | 21,900 | C. |
| June | 327 | 82 | 164 | 9,760 | C. |
| July | 76 | 20 | 40.4 | 2,480 | D. |
| August | 37 | 0 | 15.8 | 952 | D. |
| The period | | | | 533,000 | |

## EAST FORK OF RUSSIAN RIVER NEAR UKIAH, CAL.

LOCATION.—At suspension footbridge in Yokayo grant, about three-fourths mile above and 3 miles northeast of Ukiah.

RECORDS AVAILABLE.—August 19, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in two sections on left bank, 40 feet below footbridge.

CHANNEL. Sand and gravel; shifts during high stages.

DISCHARGE MEASUREMENTS.—Made from footbridge or private highway bridge above gage or by wading.

DIVERSIONS.—The Snow Mountain Water & Power Co. diverts water by a tunnel from South Eel River for use in development of power at Potter Valley. This water enters the East Fork about 14 miles above station. At low stages regulation at power plant causes a noticeable fluctuation in the discharge; low-water record is therefore subject to some error, as only two gage readings are reported daily.

ACCURACY.—Rating curves fairly well defined except for high water; results fair.

*Discharge measurements of East Fork of Russian River near Ukiah, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 15 | R. C. Rice | 7.24 | 842 | Mar. 28 | E. C. Murphy | 6.28 | 283 |
| Feb. 7 | E. C. Murphy | 6.26 | 286 | May 24 | do | 6.16 | 237 |
| Mar. 13 | do | 6.22 | 278 | Aug. 21 | Charles Leidl | 4.88 | 3.2 |

*Daily gage height, in feet, of East Fork of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

[J. W. Rich, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.38 | 5.31 | 6.21 | 6.95 | 6.28 | 5.18 | 6.28 | 6.18 | 6.12 | 5.68 | 5.62 | 4.79 |
| 2 | 5.35 | 5.32 | 6.00 | 6.28 | 6.22 | 5.18 | 6.31 | 6.14 | 6.05 | 5.59 | 5.68 | 4.79 |
| 3 | 5.38 | 5.28 | 5.76 | 6.31 | 6.18 | 5.18 | 6.28 | 6.12 | 5.98 | 5.6 | 5.68 | 4.88 |
| 4 | 5.32 | 5.34 | 5.58 | 6.24 | 6.11 | 5.21 | 6.31 | 6.06 | 5.53 | 5.58 | 5.69 | 4.86 |
| 5 | 5.28 | 5.42 | 5.42 | 6.21 | 6.05 | 5.16 | 6.31 | 6.08 | 5.90 | 5.56 | 5.66 | 4.80 |
| 6 | 5.25 | 9.6 | 5.46 | 6.28 | 5.92 | 5.18 | 6.28 | 6.09 | 5.92 | 5.54 | 5.68 | 4.81 |
| 7 | 5.22 | 8.3 | 5.65 | 6.31 | 5.88 | 5.22 | 6.21 | 6.04 | 5.90 | 5.50 | 5.52 | 4.78 |
| 8 | 5.21 | 7.5 | 5.62 | 6.7 | 5.81 | 5.20 | 6.28 | 6.08 | 5.81 | 5.58 | 5.30 | 4.78 |
| 9 | 5.21 | 6.48 | 5.68 | 6.55 | 5.75 | 5.30 | 6.24 | 6.11 | 5.86 | 5.51 | 5.21 | 4.78 |
| 10 | 5.28 | 6.48 | 5.68 | 6.42 | 5.68 | 5.42 | 6.20 | 6.12 | 5.85 | 5.55 | 5.21 | 4.78 |
| 11 | 5.26 | 6.26 | 5.70 | 6.34 | 5.61 | 5.51 | 6.21 | 6.11 | 5.80 | 5.59 | 5.15 | 4.72 |
| 12 | 5.30 | 6.48 | 5.78 | 9.0 | 5.58 | 5.58 | 6.28 | 6.10 | 5.80 | 5.52 | 5.14 | 4.78 |
| 13 | 5.38 | 6.7 | 5.88 | 8.8 | 5.51 | 5.68 | 6.22 | 6.15 | 5.70 | 5.51 | 4.63 | 4.79 |
| 14 | 5.42 | 6.48 | 6.28 | 8.9 | 5.55 | 5.74 | 6.22 | 6.16 | 5.88 | 5.56 | 4.60 | 4.75 |
| 15 | 5.39 | 6.38 | 7.4 | 8.9 | 5.51 | 5.88 | 6.24 | 6.14 | 5.64 | 5.56 | 4.52 | 4.79 |
| 16 | 5.35 | 6.49 | 9.0 | 9.6 | 5.54 | 5.84 | 6.28 | 6.10 | 5.58 | 5.55 | 4.9 | 4.79 |
| 17 | 5.42 | 6.45 | 6.9 | 10.2 | 5.58 | 6.18 | 6.26 | 6.11 | 5.58 | 5.64 | 4.88 | 4.76 |
| 18 | 5.40 | 6.32 | 6.55 | 11.0 | 5.57 | 6.7 | 6.24 | 6.18 | 5.58 | 5.62 | 4.82 | 4.81 |
| 19 | 5.41 | 6.22 | 6.45 | 8.7 | 5.56 | 6.38 | 6.22 | 6.19 | 5.52 | 5.62 | 4.84 | 4.78 |
| 20 | 5.44 | 6.21 | 6.25 | 8.2 | 5.56 | 6.22 | 6.18 | 6.18 | 5.60 | 5.62 | 4.82 | 4.79 |
| 21 | 5.41 | 6.32 | 6.20 | 7.7 | 5.62 | 6.38 | 6.20 | 6.16 | 5.55 | 5.66 | 4.81 | 4.82 |
| 22 | 5.45 | 6.28 | 6.30 | 7.55 | 5.64 | 6.48 | 6.16 | 6.15 | 5.55 | 5.68 | 4.88 | 4.79 |
| 23 | 5.44 | 6.26 | 6.40 | 7.45 | 5.62 | 6.49 | 6.22 | 6.14 | 5.52 | 5.69 | 4.88 | 4.79 |
| 24 | 5.38 | 6.28 | 6.45 | 7.3 | 5.62 | 6.38 | 6.22 | 6.11 | 5.55 | 5.70 | 4.82 | 4.75 |
| 25 | 5.38 | 6.26 | 6.30 | 7.0 | 5.48 | 6.31 | 6.22 | 6.08 | 5.54 | 5.65 | 4.88 | 4.78 |
| 26 | 5.36 | 6.26 | 6.35 | 6.6 | 5.38 | 6.28 | 6.18 | 6.11 | 5.55 | 5.68 | 4.86 | 4.78 |
| 27 | 5.32 | 6.28 | 6.5 | 6.38 | 5.25 | 6.31 | 6.21 | 6.14 | 5.52 | 5.68 | 4.88 | 4.79 |
| 28 | 5.36 | 6.25 | 6.6 | 6.22 | 5.24 | 6.28 | 6.18 | 6.12 | 5.58 | 5.68 | 4.82 | 4.79 |
| 29 | 5.40 | 6.28 | 6.7 | 6.31 | ..... | 6.34 | 6.18 | 6.19 | 5.62 | 5.71 | 4.80 | 4.78 |
| 30 | 5.41 | 6.28 | 6.75 | 6.32 | ..... | 6.31 | 6.21 | 6.12 | 5.62 | 5.62 | 4.78 | 4.78 |
| 31 | 5.38 | ..... | 6.8 | 6.31 | ..... | 6.32 | ..... | 6.11 | ..... | 5.64 | 4.75 | ..... |

NOTE.—Nov. 6, 1912, maximum recorded stage 10.2 feet at 10.30 a. m.; mean gage height computed from graph. Other maximum recorded gage heights: Dec. 15, 1912, 10.4 feet at 8 a. m.; Jan. 18, 1913, 11.3 feet at 8.55 a. m. Jan. 12, 1913, mean gage height computed from five readings.

*Daily discharge, in second-feet, of East Fork of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42 | 33 | 258 | 640 | 286 | 18 | 286 | 246 | 224 | 92 | 78 | 2 |
| 2 | 38 | 35 | 180 | 286 | 262 | 18 | 298 | 231 | 198 | 72 | 92 | 2 |
| 3 | 42 | 30 | 110 | 298 | 246 | 18 | 286 | 224 | 174 | 74 | 92 | 3 |
| 4 | 35 | 37 | 70 | 270 | 220 | 21 | 298 | 202 | 61 | 70 | 94 | 3 |
| 5 | 30 | 49 | 45 | 258 | 198 | 17 | 298 | 209 | 148 | 67 | 87 | 2 |
| 6 | 28 | 3,120 | 50 | 286 | 154 | 18 | 286 | 212 | 154 | 63 | 92 | 2 |
| 7 | 25 | 1,760 | 85 | 298 | 142 | 22 | 258 | 194 | 148 | 56 | 60 | 2 |
| 8 | 24 | 1,040 | 78 | 492 | 123 | 20 | 286 | 209 | 123 | 70 | 30 | 2 |
| 9 | 24 | 376 | 92 | 412 | 108 | 30 | 270 | 220 | 137 | 58 | 21 | 2 |
| 10 | 30 | 376 | 92 | 348 | 92 | 45 | 254 | 224 | 134 | 65 | 21 | 2 |
| 11 | 28 | 278 | 96 | 312 | 76 | 58 | 258 | 220 | 120 | 72 | 16 | 1 |
| 12 | 32 | 376 | 115 | 2,450 | 70 | 70 | 286 | 216 | 120 | 60 | 15 | 2 |
| 13 | 42 | 492 | 142 | 2,250 | 58 | 92 | 262 | 235 | 96 | 58 | 0 | 2 |
| 14 | 49 | 376 | 286 | 2,350 | 65 | 106 | 262 | 239 | 142 | 67 | 0 | 2 |
| 15 | 44 | 329 | 960 | 2,350 | 58 | 142 | 270 | 231 | 83 | 67 | 0 | 2 |
| 16 | 38 | 381 | 2,450 | 3,090 | 63 | 131 | 286 | 216 | 70 | 65 | 3 | 2 |
| 17 | 49 | 362 | 609 | 3,750 | 70 | 246 | 278 | 220 | 70 | 83 | 3 | 2 |
| 18 | 45 | 303 | 412 | 4,680 | 69 | 492 | 270 | 246 | 70 | 78 | 2 | 2 |
| 19 | 47 | 262 | 362 | 2,150 | 67 | 329 | 262 | 250 | 60 | 78 | 2 | 2 |
| 20 | 52 | 258 | 274 | 1,660 | 67 | 262 | 246 | 246 | 74 | 78 | 2 | 2 |
| 21 | 47 | 303 | 254 | 1,200 | 78 | 329 | 254 | 239 | 65 | 87 | 2 | 2 |
| 22 | 54 | 286 | 294 | 1,080 | 83 | 376 | 239 | 235 | 65 | 92 | 3 | 2 |
| 23 | 52 | 278 | 338 | 1,000 | 78 | 381 | 262 | 231 | 60 | 94 | 3 | 2 |
| 24 | 42 | 286 | 362 | 885 | 78 | 329 | 262 | 220 | 65 | 96 | 2 | 2 |
| 25 | 42 | 278 | 294 | 672 | 53 | 298 | 262 | 209 | 63 | 85 | 3 | 2 |
| 26 | 40 | 278 | 316 | 438 | 40 | 286 | 246 | 220 | 65 | 92 | 3 | 2 |
| 27 | 35 | 286 | 386 | 329 | 25 | 298 | 258 | 231 | 60 | 92 | 3 | 2 |
| 28 | 40 | 274 | 438 | 262 | 24 | 286 | 246 | 224 | 70 | 92 | 2 | 2 |
| 29 | 45 | 286 | 492 | 298 | ..... | 312 | 246 | 250 | 78 | 98 | 2 | 2 |
| 30 | 47 | 286 | 520 | 303 | ..... | 298 | 258 | 224 | 78 | 78 | 2 | 2 |
| 31 | 42 | ..... | 548 | 298 | ..... | 303 | ..... | 220 | ..... | 83 | 2 | ..... |

NOTE.—Daily discharge determined from rating curves fairly well defined below 1,000 second-feet and applicable as follows: Oct. 1 to Nov. 6, (same as used Mar. 16 to Sept. 30, 1912); Nov. 7, to Sept. 30. High-water estimates are based on extension of rating curves and are only approximate.

*Monthly discharge of East Fork of Russian River near Ukiah, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 54 | 24 | 39.7 | 2,440 | C. |
| November | 3,120 | 33 | 437 | 26,000 | B. |
| December | 2,450 | 45 | 355 | 21,800 | B. |
| January | 4,680 | 258 | 1,140 | 70,100 | C. |
| February | 286 | 24 | 106 | 5,890 | B. |
| March | 492 | 18 | 182 | 11,200 | B. |
| April | 298 | 239 | 268 | 15,900 | B. |
| May | 250 | 194 | 226 | 13,900 | B. |
| June | 224 | 60 | 102 | 6,070 | B. |
| July | 98 | 56 | 76.8 | 4,720 | C. |
| August | 94 | 0 | 23.6 | 1,450 | D. |
| September | 3 | 1 | 2.0 | 119 | D. |
| The year | 4,680 | 0 | 248 | 180,000 | |

## MATTOLE RIVER BASIN.

### MATTOLE RIVER NEAR PETROLIA, CAL.

LOCATION.—In the SW. ¼ sec. 11, T. 2 S., R. 2 W., at highway bridge, about 2 miles southeast of Petrolia.

RECORDS AVAILABLE.—November 21, 1911, to September 30, 1913.

DRAINAGE AREA.—264 square miles.

GAGE.—Painted on the left pier at highway bridge. January 13, 1912, a chain gage was installed on the bridge at same datum as original gage. May 15, 1913, a staff gage in four sections was installed on left bank, 1,000 feet above bridge, at a different datum.

CHANNEL.—Sand and gravel; will shift during high water.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

ACCURACY.—Rating curves fairly well defined for low and medium stages; high-water estimates are approximate.

*Discharge measurements of Mattole River near Petrolia, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height, staff gage. | Gage height, chain gage. | Discharge. | Date. | Gage height staff gage. | Gage height chain gage. | Discharge. |
|---|---|---|---|---|---|---|---|
| | *Feet.* | *Feet.* | *Sec.-ft.* | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Oct. 11 | ..... | 6.22 | 62 | May 15 | 7.22 | 7.22 | 513 |
| Jan. 31 | ..... | 7.81 | 1,180 | Sept. 3 | 6.28 | 6.30 | 38 |
| Mar. 19 | ..... | 7.54 | 622 | 3 | 6.28 | 6.30 | 38 |

*Daily gage height, in feet, of Mattole River near Petrolia, Cal., for the year ending Sept. 30, 1913.*

[S. F. Adams, observer.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.22 | 6.98 | 7.6 | 8.75 | 7.75 | 7.08 | 7.65 | 7.19 | 6.88 | 6.55 | 6.38 | 6.20 |
| 2 | 6.22 | 6.98 | 7.55 | 8.55 | 7.7 | 7.18 | 7.65 | 7.14 | 6.85 | 6.55 | 6.35 | 6.20 |
| 3 | 6.22 | 6.96 | 7.5 | 8.35 | 7.65 | 7.7 | 7.65 | 7.08 | 6.84 | 6.56 | 6.35 | 6.39 |
| 4 | 6.22 | 6.96 | 7.49 | 8.10 | 7.6 | 7.35 | 8.7 | 7.03 | 6.82 | 6.54 | 6.35 | 6.60 |
| 5 | 6.22 | 10.9 | 7.46 | 7.95 | 7.6 | 7.24 | 10.6 | 7.01 | 6.80 | 6.52 | 6.35 | 6.46 |
| 6 | 6.22 | 17.9 | 7.44 | 7.85 | 7.55 | 7.22 | 9.5 | 6.98 | 6.76 | 6.52 | 6.32 | 6.39 |
| 7 | 6.22 | 10.7 | 7.41 | 7.75 | 7.5 | 7.19 | 8.95 | 6.97 | 6.75 | 6.52 | 6.32 | 6.36 |
| 8 | 6.22 | 9.4 | 7.38 | 9.8 | 7.49 | 7.16 | 8.5 | 7.08 | 6.72 | 6.52 | 6.32 | 6.32 |
| 9 | 6.22 | 13.2 | 7.34 | 8.95 | 7.45 | 7.14 | 8.25 | 7.21 | 6.70 | 6.50 | 6.32 | 6.30 |
| 10 | 6.19 | 10.9 | 7.31 | 8.6 | 7.42 | 7.12 | 8.0 | 7.65 | 6.70 | 6.50 | 6.32 | 6.28 |
| 11 | 6.20 | 10.2 | 7.38 | 8.5 | 7.40 | 7.10 | 7.85 | 7.35 | 6.70 | 6.50 | 6.30 | 6.26 |
| 12 | 6.21 | 10.5 | 8.25 | 10.7 | 7.38 | 7.08 | 7.8 | 7.47 | 6.68 | 6.48 | 6.30 | 6.25 |
| 13 | 6.21 | 10.0 | 8.4 | 16.2 | 7.35 | 7.05 | 8.2 | 7.37 | 6.68 | 6.48 | 6.30 | 6.22 |
| 14 | 6.21 | 10.9 | 10.4 | 15.1 | 7.32 | 7.04 | 8.05 | 7.26 | 6.68 | 6.45 | 6.30 | 6.22 |
| 15 | 6.21 | 10.0 | 13.7 | 13.2 | 7.30 | 7.02 | 7.95 | 7.22 | 6.66 | 6.45 | 6.30 | 6.20 |
| 16 | 6.21 | 9.2 | 15.2 | 12.2 | 7.28 | 7.00 | 7.85 | 7.18 | 6.65 | 6.45 | 6.30 | 6.20 |
| 17 | 6.21 | 8.75 | 11.4 | 12.5 | 7.25 | 7.21 | 7.75 | 7.15 | 6.65 | 6.42 | 6.28 | 6.20 |
| 18 | 6.21 | 9.2 | 10.2 | 17.8 | 7.22 | 7.8 | 7.7 | 7.12 | 6.65 | 6.42 | 6.28 | 6.20 |
| 19 | 6.21 | 8.75 | 9.5 | 13.0 | 7.20 | 7.48 | 7.6 | 7.10 | 6.85 | 6.42 | 6.28 | 6.20 |
| 20 | 6.21 | 8.45 | 8.95 | 11.0 | 7.18 | 7.45 | 7.6 | 7.08 | 6.80 | 6.42 | 6.28 | 6.20 |
| 21 | 6.21 | 8.35 | 8.4 | 10.0 | 7.15 | 7.49 | 7.55 | 7.05 | 6.69 | 6.42 | 6.28 | 6.20 |
| 22 | 6.46 | 8.2 | 8.2 | 9.6 | 7.14 | 7.6 | 7.55 | 7.02 | 6.65 | 6.42 | 6.25 | 6.20 |
| 23 | 6.70 | 8.05 | 8.05 | 9.4 | 7.12 | 8.1 | 7.5 | 7.00 | 6.72 | 6.42 | 6.25 | 6.20 |
| 24 | 6.58 | 7.95 | 7.95 | 8.95 | 7.18 | 7.9 | 7.48 | 6.98 | 6.70 | 6.40 | 6.25 | 6.20 |
| 25 | 6.33 | 7.8 | 7.75 | 8.5 | 7.15 | 7.85 | 7.45 | 6.96 | 6.66 | 6.40 | 6.25 | 6.20 |
| 26 | 7.22 | 7.8 | 7.65 | 8.3 | 7.12 | 7.85 | 7.37 | 6.95 | 6.65 | 6.40 | 6.22 | 6.20 |
| 27 | 7.44 | 7.75 | 7.55 | 8.15 | 7.11 | 7.7 | 7.38 | 6.92 | 6.62 | 6.40 | 6.22 | 6.20 |
| 28 | 7.22 | 7.7 | 7.4 | 8.05 | 7.10 | 7.75 | 7.34 | 6.90 | 6.61 | 6.40 | 6.22 | 6.20 |
| 29 | 7.09 | 7.7 | 7.26 | 7.95 | ..... | 7.8 | 7.31 | 6.90 | 6.60 | 6.38 | 6.22 | 6.20 |
| 30 | 6.86 | 7.65 | 10.1 | 7.85 | ..... | 7.75 | 7.20 | 6.88 | 6.58 | 6.38 | 6.22 | 6.20 |
| 31 | 7.00 | ..... | 9.2 | 7.8 | ..... | 7.7 | ..... | ..... | ..... | 6.38 | 6.22 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 19.9 feet at 8 a. m.; Jan. 18, 1913, 19.3 feet at 8 a. m. Gage readings beginning May 15 taken on staff gage 1,000 feet above original gage.

*Daily discharge, in second-feet, of Mattole River near Petrolia, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 72 | 1,220 | 2,780 | 965 | 715 | 10,000 | 830 | 242 | 122 | 56 |
| 2 | ..... | 68 | 880 | 2,410 | 870 | 664 | 5,830 | 791 | 236 | 122 | 56 |
| 3 | ..... | 68 | 645 | 2,010 | 800 | 614 | 3,690 | 698 | 225 | 122 | 106 |
| 4 | ..... | 68 | 520 | 1,860 | 753 | 598 | 2,780 | 638 | 225 | 122 | 162 |
| 5 | ..... | 92 | 465 | 1,780 | 1,130 | 558 | 2,170 | 598 | 215 | 122 | 412 |
| 6 | ..... | 795 | 440 | 1,640 | 2,090 | 512 | 1,860 | 558 | 215 | 122 | 1,250 |
| 7 | ..... | 520 | 838 | 2,410 | 3,890 | 512 | 1,500 | 520 | 215 | 122 | 724 |
| 8 | ..... | 290 | 795 | 4,090 | 2,860 | 490 | 1,310 | 482 | 215 | 114 | 412 |
| 9 | ..... | 197 | 1,940 | 4,300 | 2,330 | 461 | 1,190 | 440 | 215 | 114 | 269 |
| 10 | ..... | 168 | 2,170 | 5,160 | 1,860 | 482 | 1,020 | 419 | 215 | 106 | 215 |
| 11 | ..... | 146 | 2,410 | 4,300 | 1,500 | 520 | 910 | 412 | 215 | 106 | 166 |
| 12 | ..... | 128 | 2,250 | 3,110 | 1,930 | 535 | 860 | 440 | 215 | 94 | 152 |
| 13 | ..... | 120 | 4,720 | 3,690 | 1,500 | 482 | 772 | 475 | 215 | 94 | 130 |
| 14 | ..... | 113 | 2,930 | 3,300 | 1,310 | 447 | 681 | 505 | 215 | 94 | 110 |
| 15 | ..... | 106 | 2,170 | 3,020 | 6,760 | 412 | 614 | 468 | 215 | 90 | 78 |
| 16 | ..... | 101 | 1,580 | 4,510 | 6,520 | 386 | 590 | 433 | 215 | 84 | 78 |
| 17 | ..... | 122 | 1,220 | 7,970 | 4,720 | 360 | 574 | 461 | 205 | 84 | 72 |
| 18 | ..... | 92 | 1,280 | 6,760 | 4,090 | 360 | 550 | 366 | 205 | 84 | 72 |
| 19 | ..... | 60 | 1,860 | 4,510 | 3,110 | 353 | 542 | 328 | 157 | 78 | 72 |
| 20 | ..... | 211 | 1,460 | 3,300 | 2,500 | 340 | 890 | 316 | 143 | 78 | 72 |
| 21 | 114 | 184 | 1,340 | 2,780 | 2,010 | 328 | 810 | 298 | 143 | 78 | 72 |
| 22 | 107 | 159 | 1,460 | 2,250 | 1,860 | 328 | 910 | 292 | 143 | 72 | 72 |
| 23 | 100 | 184 | 1,220 | 2,010 | 1,710 | 353 | 1,780 | 328 | 143 | 72 | 72 |
| 24 | 92 | 172 | 12,500 | 1,710 | 1,570 | 419 | 1,370 | 316 | 130 | 72 | 72 |
| 25 | 86 | 84 | 55,600 | 1,500 | 1,310 | 392 | 1,250 | 298 | 130 | 63 | 72 |
| 26 | 85 | 148 | 25,700 | 1,370 | 1,130 | 360 | 1,640 | 298 | 130 | 63 | 72 |
| 27 | 79 | 715 | 10,300 | 1,190 | 1,020 | 392 | 1,780 | 280 | 130 | 63 | 72 |
| 28 | 76 | 1,520 | 6,290 | 1,130 | 910 | 520 | 1,440 | 269 | 122 | 63 | 69 |
| 29 | 74 | 838 | 4,300 | 1,080 | 782 | 7,480 | 1,250 | 264 | 122 | 56 | 66 |
| 30 | 74 | 645 | 3,490 | ..... | 782 | 10,000 | 1,020 | 258 | 122 | 56 | 66 |
| 31 | ..... | 1,070 | 2,930 | ..... | 753 | ..... | 890 | ..... | 122 | 56 | ..... |

*Daily discharge, in second-feet, of Mattole River near Petrolia, Cal., for the years ending Sept. 30, 1912–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 66 | 461 | 1,020 | 2,680 | 970 | 362 | 855 | 438 | 290 | 126 | 66 | 20 |
| 2 | 66 | 461 | 965 | 2,330 | 910 | 431 | 855 | 403 | 273 | 126 | 58 | 20 |
| 3 | 66 | 447 | 910 | 2,010 | 855 | 910 | 855 | 362 | 267 | 126 | 58 | 69 |
| 4 | 66 | 447 | 900 | 1,640 | 800 | 568 | 2,460 | 330 | 256 | 122 | 58 | 146 |
| 5 | 66 | 7,240 | 870 | 1,440 | 800 | 477 | 6,520 | 316 | 244 | 114 | 58 | 92 |
| 6 | 66 | 28,900 | 850 | 1,310 | 750 | 461 | 4,090 | 298 | 223 | 114 | 49 | 69 |
| 7 | 66 | 6,760 | 820 | 1,190 | 700 | 438 | 2,940 | 292 | 218 | 114 | 49 | 60 |
| 8 | 66 | 3,890 | 791 | 4,720 | 691 | 417 | 2,100 | 362 | 202 | 114 | 49 | 49 |
| 9 | 66 | 13,400 | 753 | 3,020 | 655 | 403 | 1,680 | 453 | 192 | 106 | 49 | 43 |
| 10 | 58 | 7,240 | 724 | 2,410 | 628 | 389 | 1,300 | 855 | 192 | 106 | 49 | 38 |
| 11 | 60 | 5,600 | 791 | 2,250 | 610 | 375 | 1,100 | 568 | 192 | 106 | 43 | 34 |
| 12 | 63 | 6,290 | 1,860 | 6,760 | 593 | 362 | 1,030 | 673 | 183 | 99 | 43 | 32 |
| 13 | 63 | 5,160 | 2,090 | 23,000 | 568 | 442 | 1,600 | 584 | 183 | 99 | 43 | 25 |
| 14 | 63 | 7,240 | 6,060 | 19,400 | 542 | 336 | 1,380 | 493 | 183 | 89 | 43 | 25 |
| 15 | 63 | 5,160 | 14,900 | 13,400 | 525 | 323 | 1,230 | 524 | 174 | 89 | 43 | 20 |
| 16 | 63 | 3,490 | 19,700 | 10,600 | 509 | 310 | 1,100 | 493 | 169 | 89 | 43 | 20 |
| 17 | 63 | 2,680 | 8,470 | 11,400 | 485 | 453 | 970 | 471 | 169 | 79 | 38 | 20 |
| 18 | 63 | 3,490 | 5,600 | 28,500 | 461 | 1,030 | 910 | 449 | 169 | 79 | 38 | 20 |
| 19 | 63 | 2,680 | 4,090 | 12,800 | 445 | 682 | 800 | 434 | 273 | 79 | 38 | 20 |
| 20 | 63 | 2,170 | 3,020 | 7,480 | 431 | 655 | 800 | 420 | 244 | 79 | 38 | 20 |
| 21 | 63 | 2,010 | 2,090 | 5,160 | 410 | 691 | 750 | 400 | 187 | 79 | 38 | 20 |
| 22 | 157 | 1,780 | 1,780 | 4,280 | 403 | 800 | 750 | 380 | 169 | 79 | 32 | 20 |
| 23 | 280 | 1,570 | 1,570 | 3,860 | 389 | 1,450 | 700 | 366 | 202 | 79 | 32 | 20 |
| 24 | 215 | 1,440 | 1,440 | 2,940 | 431 | 1,100 | 682 | 353 | 192 | 72 | 32 | 20 |
| 25 | 102 | 1,250 | 1,190 | 2,100 | 410 | 1,100 | 655 | 340 | 174 | 72 | 32 | 20 |
| 26 | 647 | 1,250 | 1,080 | 1,760 | 389 | 1,100 | 584 | 334 | 169 | 72 | 25 | 20 |
| 27 | 850 | 1,190 | 965 | 1,520 | 382 | 910 | 593 | 315 | 155 | 72 | 25 | 20 |
| 28 | 647 | 1,130 | 810 | 1,380 | 375 | 970 | 559 | 315 | 151 | 72 | 25 | 20 |
| 29 | 542 | 1,130 | 681 | 1,230 | ..... | 1,030 | 534 | 302 | 146 | 66 | 25 | 20 |
| 30 | 679 | 1,080 | 5,380 | 1,100 | ..... | 970 | 445 | 302 | 138 | 66 | 25 | 20 |
| 31 | 475 | ..... | 3,490 | 1,030 | ..... | 910 | ..... | 290 | ..... | 66 | 25 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Nov. 21, 1911, to Jan. 25, 1912, poorly defined; Jan. 26, 1912, to Jan. 18, 1913, fairly well defined below 4,000 second-feet; Jan. 19 to May 14, 1913, poorly defined; and May 15 to Sept. 30, 1913, fairly well defined. Estimates for high water are based on extension of rating curves and are only approximate.

*Monthly discharge of Mattole River near Petrolia, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911–12. | | | | | |
| November 21–30 | 114 | 74 | 88.7 | 1,760 | B. |
| December | 1,520 | 60 | 299 | 18,400 | C. |
| January | 55,600 | 440 | 5,060 | 311,000 | C. |
| February | 7,970 | 1,080 | 3,030 | 174,000 | B. |
| March | 6,790 | 753 | 2,110 | 130,000 | B. |
| April | 10,000 | 328 | 1,010 | 60,100 | B. |
| May | 10,000 | 542 | 1,690 | 104,000 | B. |
| June | 830 | 258 | 436 | 25,900 | B. |
| July | 242 | 122 | 182 | 11,200 | B. |
| August | 122 | 56 | 89.9 | 5,530 | B. |
| September | 1,250 | 56 | 179 | 10,700 | B. |
| The period | ..... | ..... | ..... | 853,000 | |
| 1912–13. | | | | | |
| October | 850 | 58 | 191 | 11,700 | B. |
| November | 28,900 | 447 | 4,230 | 252,000 | C. |
| December | 19,700 | 681 | 3,090 | 190,000 | C. |
| January | 28,500 | 1,030 | 5,960 | 366,000 | C. |
| February | 970 | 375 | 576 | 32,000 | C. |
| March | 1,450 | 310 | 675 | 41,500 | C. |
| April | 6,520 | 445 | 1,360 | 80,900 | C. |
| May | 855 | 290 | 417 | 25,600 | C. |
| June | 290 | 138 | 199 | 11,800 | C. |
| July | 126 | 66 | 91.9 | 5,650 | C. |
| August | 66 | 25 | 40.9 | 2,510 | C. |
| September | 146 | 20 | 34.7 | 2,060 | C. |
| The year | 28,900 | 20 | 1,410 | 1,020,000 | |

## EEL RIVER BASIN.

### SOUTH EEL RIVER AT HEARST, CAL.

LOCATION.—In the NE. ¼ sec. 20, T. 19 N., R. 12 W., at highway bridge at Hearst, about 3 miles below Sanhedrin Creek. Salt Creek enters 300 feet below gage.

RECORDS AVAILABLE.—December 8, 1910, to August 22, 1913, when the station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Painted on downstream caisson of left abutment of bridge; staff in two sections for lower stages.

CHANNEL.—Gravel, with solid rock on left bank; will shift slightly at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—The Snow Mountain Water & Power Co. diverts water for use in development of power about 10 miles above the station. This water is discharged into the East Fork of Russian River at Potter Valley.

ACCURACY.—Rating curves fairly well defined for low and medium stages; estimates for high water approximate.

*Discharge measurements at South Eel River at Hearst, Cal., during the years ending Sept. 30, 1910–1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| 1910. | | | | Mar. 8 | R. C. Rice | 11.80 | 1,080 |
| Aug. 13 | W. V. Hardy | | 5.4 | Apr. 3 | do | 9.98 | 330 |
| 1910–11. | | | | 4 | do | 9.96 | 264 |
| Dec. 8 | do | 8.95 | 44 | Aug. 14 | J. E. Stewart | 7.63 | 8.6 |
| Mar. 3 | J. E. Stewart | 10.69 | 471 | | | | |
| Aug. 19 | E. O. Christiansen | 7.60 | 4.5 | 1912–13. | | | |
| | | | | Feb. 8 | E. C. Murphy | 11.62 | 918 |
| 1911–12. | | | | Mar. 20 | do | 10.30 | 478 |
| Nov. 4 | do | 7.59 | 4.6 | May 25 | do | 8.76 | 129 |
| 19 | Whipple and Stanley | 7.76 | 8.7 | 25 | do | 8.73 | 120 |
| Jan. 30 | R. C. Rice | 11.12 | 636 | Aug. 22 | Charles Leidl | 7.36 | 3.8 |

NOTE.—All gage heights corrected to datum of gage painted on caisson. Aug. 19, 1911, gage height corresponding to zero flow, determined as 7.3 feet.

*Daily gage height, in feet, of South Eel River at Hearst, Cal., for the years ending Sept. 30, 1911–13.*

[C. M. Neighbor, observer.]

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | ..... | 8.45 | 15.0 | 10.7 | 13.1 | 10.5 | 10.3 | 8.00 | 7.69 | 7.50 |
| 2 | ..... | 8.43 | 15.2 | 10.5 | 12.8 | 10.6 | 9.9 | 8.00 | 7.67 | 7.50 |
| 3 | ..... | 8.40 | 14.8 | 10.7 | 12.2 | 10.7 | 9.9 | 7.99 | 7.66 | 7.50 |
| 4 | ..... | 8.40 | 14.1 | 13.0 | 12.8 | 10.8 | 9.5 | 7.98 | 7.65 | 7.50 |
| 5 | ..... | 8.40 | 13.6 | 15.9 | 16.4 | 11.0 | 9.6 | 7.97 | 7.70 | 7.50 |
| 6 | ..... | 8.38 | 13.3 | 20.3 | 15.4 | 10.7 | 9.40 | 7.92 | 7.69 | 7.50 |
| 7 | ..... | 8.36 | 12.8 | 20.0 | 13.2 | 10.4 | 9.6 | 7.91 | 7.68 | 7.50 |
| 8 | 8.95 | 8.35 | 12.6 | 17.4 | 13.1 | 10.3 | 9.40 | 7.90 | 7.68 | 7.50 |
| 9 | 9.85 | 8.39 | 12.0 | 16.2 | 12.9 | 10.2 | 9.30 | 7.91 | 7.67 | 7.50 |
| 10 | 9.5 | 8.60 | 11.8 | 13.7 | 12.8 | 10.1 | 9.10 | 7.89 | 7.66 | 7.50 |
| 11 | 10.0 | 11.0 | 14.3 | 13.6 | 12.6 | 10.1 | 9.02 | 7.93 | 7.65 | 7.50 |
| 12 | 9.9 | 10.6 | 13.6 | 13.2 | 12.5 | ..... | 8.95 | 7.85 | 7.66 | 7.50 |
| 13 | 9.30 | 10.8 | 14.1 | 12.8 | 12.3 | 10.05 | 8.87 | 7.83 | 7.66 | 7.52 |
| 14 | 9.00 | 11.7 | 13.3 | 12.7 | 11.9 | 10.05 | 8.60 | 7.80 | 7.65 | 7.52 |
| 15 | 8.85 | 11.5 | 12.7 | 12.6 | 11.8 | 9.75 | 8.55 | 7.81 | 7.64 | 7.52 |
| 16 | 8.80 | 10.6 | 12.3 | 12.5 | 11.9 | 9.9 | 8.44 | 7.81 | 7.62 | 7.50 |
| 17 | 8.76 | 10.05 | 11.9 | 12.8 | 11.6 | 9.95 | 8.37 | 7.80 | 7.60 | 7.50 |
| 18 | 8.70 | 10.8 | 11.7 | 12.8 | 11.5 | 11.8 | 8.20 | 7.80 | 7.60 | 7.50 |
| 19 | 8.62 | 19.0 | 12.2 | 12.7 | 11.4 | 11.1 | 8.18 | 7.79 | 7.61 | 7.50 |
| 20 | 8.62 | 18.6 | 11.9 | 12.8 | 11.3 | 10.6 | 8.15 | 7.79 | 7.62 | 7.50 |
| 21 | 8.60 | 14.1 | 11.5 | 12.8 | 11.2 | 10.5 | 8.12 | 7.79 | 7.62 | 7.50 |
| 22 | 8.50 | 12.5 | 11.5 | 12.9 | 11.2 | 10.5 | 8.14 | 7.78 | 7.65 | 7.50 |
| 23 | 8.50 | 11.8 | 11.4 | 12.7 | 11.2 | 10.4 | 8.12 | 7.78 | 7.62 | 7.50 |
| 24 | 8.50 | 13.9 | 11.2 | 12.6 | 11.8 | 10.3 | 8.11 | 7.76 | 7.60 | 7.50 |
| 25 | 8.50 | 13.6 | 11.2 | 12.4 | 11.5 | 9.9 | 8.11 | 7.75 | 7.60 | 7.52 |
| 26 | 8.47 | 13.9 | 11.0 | 12.3 | 11.4 | 9.9 | 8.10 | 7.74 | 7.58 | 7.52 |
| 27 | 8.45 | 16.2 | 10.8 | 11.9 | 11.2 | 9.9 | 8.10 | 7.73 | 7.55 | 7.55 |
| 28 | 8.45 | 17.2 | 10.8 | 12.2 | 11.0 | 9.8 | 8.08 | 7.72 | 7.55 | 7.60 |
| 29 | 8.42 | 15.4 | ..... | 12.3 | 10.6 | 9.7 | 8.02 | 7.74 | 7.52 | 7.58 |
| 30 | 8.44 | 17.6 | ..... | 12.9 | 10.5 | 9.8 | 8.00 | 7.70 | 7.52 | ..... |
| 31 | 8.47 | 16.4 | ..... | 13.0 | ..... | 9.9 | ..... | 7.68 | 7.52 | ..... |

*Daily gage height, in feet, of South Eel River at Hearst, Cal., for 1911–12.*

[C. M. Neighbor.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 7.52 | 7.52 | 7.70 | 7.85 | 10.1 | 8.80 | 10.2 | 17 6 | 10.2 | 8.10 | 7.70 | 7.60 |
| 2 | 7.55 | 7.52 | 7.70 | 7.95 | 10.0 | 8.70 | 10.0 | 14.4 | 10.1 | 8.08 | 7.80 | 7.60 |
| 3 | 7.58 | 7.60 | 7.70 | 7.95 | 9.9 | 8.55 | 9.9 | 13.4 | 9.9 | 8.05 | 7.80 | 7.70 |
| 4 | 7.52 | 7.60 | 7.72 | 8.00 | 9.30 | 9.00 | 9.9 | 12.8 | 9.6 | 8.02 | 7.80 | 7.70 |
| 5 | 7.55 | 7.60 | 7.75 | 8.15 | 8.85 | 13.0 | 9.8 | 12.7 | 9.5 | 8.00 | 7.70 | 7.80 |
| 6 | 7.52 | 7.58 | 7.72 | 8.35 | 8.85 | 12.7 | 9.6 | 12.6 | 9.30 | 7.98 | 7.70 | 9.55 |
| 7 | 7.52 | 7.60 | 7.70 | 8.50 | 10.2 | 13.3 | 9.5 | 12.4 | 9.00 | 7.95 | 7.80 | 8.95 |
| 8 | 7.55 | 7.60 | 7.70 | 8.80 | 10.35 | 11.5 | 9.7 | 12.2 | 8.90 | 7.90 | 7.75 | 8.15 |
| 9 | 7.72 | 7.60 | 7.75 | 9.45 | 9.85 | 11.1 | 9.55 | 12.1 | 8.80 | 7.88 | 7.80 | 8.00 |
| 10 | 7.72 | 8.20 | 7.72 | 9.46 | 9.8 | 10.9 | 10.0 | 11.9 | 8.70 | 7.85 | 7.80 | 7.90 |
| 11 | 7.68 | 7.80 | 7.75 | 9.08 | 9.85 | 10.7 | 11.7 | 11.7 | 8.70 | 7.82 | 7.75 | 7.82 |
| 12 | 7.62 | 7.70 | 7.75 | 9.35 | 9.7 | 10.7 | 11.8 | 11.3 | 8.70 | 7.80 | 7.80 | 7.80 |
| 13 | 7.60 | 7.70 | 7.75 | 8.90 | 10.0 | 11.3 | 10.1 | 11.3 | 8.60 | 7.80 | 7.70 | 7.75 |
| 14 | 7.60 | 7.75 | 7.75 | 8.88 | 10.4 | 11.6 | 10.8 | 10.9 | 8.40 | 7.80 | 7.70 | 7.72 |
| 15 | 7.60 | 7.90 | 7.75 | 8.80 | 10.0 | 16.0 | 10.6 | 10.7 | 8.40 | 7.80 | 7.70 | 7.72 |
| 16 | 7.60 | 7.75 | 7.82 | 8.80 | 10.3 | 12.3 | 10.6 | 10.5 | 8.38 | 7.85 | 7.70 | 7.72 |
| 17 | 7.58 | 7.72 | 8.00 | 8.88 | 10.6 | 12.3 | 10.4 | 10.25 | 8.30 | 7.80 | 7.70 | 7.72 |
| 18 | 7.58 | 7.68 | 7.95 | 8.90 | 12.2 | 12.2 | 10.3 | 10.2 | 8.30 | 7.80 | 7.70 | 7.72 |
| 19 | 7.58 | 7.68 | 7.88 | 8.88 | 11.4 | 12.2 | 10.1 | 10.1 | 8.28 | 7.80 | 7.70 | 7.70 |
| 20 | 7.58 | 7.72 | 7.85 | 8.70 | 10.9 | 11.9 | 9.9 | 10.7 | 8.22 | 7.80 | 7.65 | 7.70 |
| 21 | 7.58 | 7.72 | 7.85 | 8.60 | 10.4 | 11.9 | 9.8 | 10.4 | 8.20 | 7.85 | 7.65 | 7.70 |
| 22 | 7.58 | 7.72 | 7.90 | 8.48 | 10.35 | 11.2 | 9.7 | 10.3 | 8.20 | 7.90 | 7.65 | 7.70 |
| 23 | 7.60 | 7.72 | 7.88 | 8.42 | 10.2 | 11.1 | 9.6 | 10.5 | 8.22 | 7.85 | 7.65 | 7.70 |
| 24 | 7.55 | 7.72 | 7.80 | 10.15 | 10.1 | 11.0 | 9.7 | 10.9 | 8.20 | 7.85 | 7.65 | 7.70 |
| 25 | 7.58 | 7.72 | 7.78 | 19.1 | 10.0 | 10.9 | 9.6 | 11.4 | 8.20 | 7.80 | 7.65 | 7.70 |
| 26 | 7.55 | 7.70 | 7.80 | 18.2 | 9.9 | 10.8 | 9.6 | 11.4 | 8.18 | 7.80 | 7.62 | 7.70 |
| 27 | 7.57 | 7.70 | 7.80 | 16.4 | 9.6 | 10.6 | 9.42 | 11.6 | 8.15 | 7.80 | 7.62 | 7.70 |
| 28 | 7.55 | 7.70 | 7.80 | 13.4 | 9.6 | 10.9 | 9.30 | 11.2 | 8.12 | 7.80 | 7.62 | 7.70 |
| 29 | 7.55 | 7.70 | 8.25 | 11.2 | 9.5 | 10.8 | 12.8 | 10.9 | 8.10 | 7.80 | 7.60 | 7.68 |
| 30 | 7.52 | 7.70 | 8.28 | 11.2 | ..... | 10.5 | 14.6 | 10.6 | 8.10 | 7.80 | 7.60 | 7.65 |
| 31 | 7.52 | ..... | 8.25 | 10.4 | ..... | 10.3 | ..... | 10.3 | ..... | 7.80 | 7.60 | ..... |

*Daily gage height, in feet, of South Eel River at Hearst, Cal., for 1912–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 7.65 | 7.80 | 8.52 | 11.3 | 12.6 | 9.20 | 11.8 | 9.8 | 8.08 | 7.78 | 7.50 |
| 2 | 7.65 | 7.90 | 8.58 | 11.0 | 12.4 | 9.20 | 11.6 | 9.55 | 8.10 | 7.75 | 7.00 |
| 3 | 7.68 | 7.95 | 8.58 | 10.6 | 12.1 | 9.5 | 12.2 | 9.5 | 8.10 | 7.72 | 7.00 |
| 4 | 7.68 | 8.10 | 8.58 | 10.4 | 11.9 | 9.48 | 13.2 | 9.5 | 8.42 | 7.72 | 7.00 |
| 5 | 7.68 | 13.4 | 8.55 | 19.6 | 12.5 | 9.40 | 14.8 | 9.5 | 8.02 | 7.70 | 10.4 |
| 6 | 7.68 | 21.3 | 8.50 | 10.0 | 12.1 | 9.40 | 13.4 | 9.45 | 8.00 | 7.68 | 9.5 |
| 7 | 7.70 | 19.7 | 8.48 | 10.0 | 11.4 | 9.38 | 12.4 | 9.5 | 7.92 | 7.65 | 9.00 |
| 8 | 7.70 | 13.3 | 8.45 | 10.8 | 11.6 | 9.38 | 12.2 | 9.5 | 7.80 | 7.62 | 8.80 |
| 9 | 7.70 | 11.2 | 8.42 | 10.4 | 11.9 | 9.5 | 11.9 | 10.25 | 7.72 | 7.60 | 8.60 |
| 10 | 7.72 | 13.2 | 8.40 | 10.3 | 11.4 | 9.55 | 11.7 | 9.95 | 7.80 | 7.60 | 8.20 |
| 11 | 7.75 | 11.4 | 8.40 | 10.2 | 11.3 | 9.6 | 11.5 | 9.8 | 7.90 | 7.60 | 8.00 |
| 12 | 7.75 | 11.2 | 8.40 | 12.5 | 11.1 | 9.5 | 11.4 | 9.7 | 7.90 | 7.58 | 7.80 |
| 13 | 7.78 | 10.6 | 8.40 | 19.0 | 10.8 | 9.40 | 11.4 | 9.7 | 7.88 | 7.58 | 7.60 |
| 14 | 7.78 | 10.5 | 10.3 | 19.3 | 10.7 | 9.30 | 11.2 | 9.65 | 7.88 | 7.58 | 7.40 |
| 15 | 7.75 | 10.2 | 15.4 | 17.4 | 10.6 | 9.15 | 11.0 | 9.6 | 7.85 | 7.58 | 7.40 |
| 16 | 7.72 | 10.1 | 19.0 | 16.4 | 10.6 | 9.00 | 11.0 | 9.5 | 7.82 | 7.55 | 7.40 |
| 17 | 7.70 | 9.8 | 14.1 | 13.8 | 10.6 | 9.18 | 10.9 | 9.40 | 7.80 | 7.55 | ..... |
| 18 | 7.70 | 9.7 | 13.3 | 24.5 | 10.5 | 10.9 | 10.7 | 9.35 | 7.80 | 7.52 | ..... |
| 19 | 7.68 | 9.4 | 12.4 | 16.0 | 10.25 | 10.9 | 10.6 | 9.20 | 7.80 | 7.52 | ..... |
| 20 | 7.68 | 11.4 | 10.7 | 14.3 | 10.2 | 11.0 | 10.5 | 9.15 | 7.80 | 7.50 | ..... |
| 21 | 7.68 | 10.35 | 10.0 | 13.5 | 9.9 | 12.9 | 10.4 | 9.10 | 7.80 | 7.50 | ..... |
| 22 | 7.70 | 10.3 | 10.55 | 13.3 | 9.8 | 12.2 | 10.35 | 9.10 | 7.80 | 7.50 | 7.36 |
| 23 | 7.70 | 10.3 | 10.5 | 12.8 | 9.7 | 11.6 | 10.3 | 9.08 | 7.80 | 7.50 | ..... |
| 24 | 7.68 | 10.2 | 10.3 | 12.4 | 9.75 | 11.3 | 10.2 | 8.95 | 7.80 | 7.50 | ..... |
| 25 | 7.65 | 10.25 | 9.9 | 12.6 | 9.75 | 10.9 | 10.2 | 8.80 | 7.80 | 7.50 | ..... |
| 26 | 7.65 | 9.95 | 9.75 | 12.6 | 9.7 | 10.6 | 10.15 | 8.80 | 7.80 | 7.50 | ..... |
| 27 | 7.65 | 8.88 | 9.6 | 12.5 | 9.6 | 10.7 | 10.1 | 9.10 | 7.82 | 7.50 | ..... |
| 28 | 7.62 | 8.80 | 9.5 | 12.6 | 9.40 | 10.9 | 10.05 | 9.20 | 7.80 | 7.50 | ..... |
| 29 | 7.60 | 8.78 | 9.3 | 12.6 | ..... | 11.0 | 9.9 | 9.00 | 7.80 | 7.50 | ..... |
| 30 | 7.60 | 8.65 | 11.2 | 12.6 | ..... | 11.8 | 9.8 | 8.70 | 7.78 | 7.50 | ..... |
| 31 | 7.70 | ..... | 11.5 | 12.7 | ..... | 11.5 | ..... | 8.30 | ..... | 7.50 | ..... |

NOTE.—All gage heights observed on first and second sections of gage, which were originally installed at incorrect datum, have been corrected to datum of gage painted on cylinder pier in accordance with levels of Aug. 22, 1913. Gage heights Dec. 8, 1910, to Sept. 30, 1912, supersede those heretofore published. Gage heights Nov. 6, 1912, and Jan. 18, 1913, taken from one reading only. Aug. 5, 1913, rise due to opening of Snow Mountain Water & Power Co.'s dam above the station.

*Daily discharge, in second-feet, of South Eel River at Hearst, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | ..... | 8 | 2,920 | 480 | 1,650 | 505 | 445 | 30 | 10 | 4 |
| 2 | ..... | 8 | 3,070 | 410 | 1,480 | 535 | 340 | 30 | 8 | 4 |
| 3 | ..... | 7 | 2,780 | 480 | 1,180 | 565 | 340 | 29 | 8 | 4 |
| 4 | ..... | 7 | 2,290 | 1,590 | 1,480 | 600 | 252 | 28 | 8 | 4 |
| 5 | ..... | 7 | 1,950 | 3,620 | 4,020 | 670 | 274 | 28 | 10 | 4 |
| 6 | ..... | 6 | 1,770 | 7,420 | 3,220 | 565 | 232 | 24 | 10 | 4 |
| 7 | ..... | 6 | 1,470 | 7,150 | 1,710 | 475 | 274 | 23 | 9 | 4 |
| 8 | 44 | 6 | 1,350 | 4,840 | 1,650 | 445 | 232 | 22 | 9 | 4 |
| 9 | 222 | 7 | 1,040 | 3,860 | 1,530 | 415 | 212 | 23 | 8 | 4 |
| 10 | 138 | 16 | 940 | 2,010 | 1,480 | 390 | 176 | 21 | 8 | 4 |
| 11 | 260 | 590 | 2,430 | 1,950 | 1,380 | 390 | 162 | 24 | 8 | 4 |
| 12 | 235 | 445 | 1,950 | 1,710 | 1,330 | 384 | 150 | 18 | 8 | 4 |
| 13 | 100 | 515 | 2,290 | 1,480 | 1,230 | 378 | 137 | 17 | 8 | 5 |
| 14 | 50 | 895 | 1,770 | 1,430 | 1,040 | 378 | 96 | 15 | 8 | 5 |
| 15 | 34 | 805 | 1,410 | 1,380 | 1,000 | 307 | 89 | 16 | 7 | 5 |
| 16 | 30 | 445 | 1,190 | 1,330 | 1,040 | 340 | 75 | 16 | 6 | 4 |
| 17 | 27 | 275 | 990 | 1,480 | 910 | 352 | 66 | 15 | 5 | 4 |
| 18 | 22 | 515 | 895 | 1,480 | 865 | 1,000 | 48 | 15 | 5 | 4 |
| 19 | 17 | 6,250 | 1,140 | 1,430 | 825 | 705 | 46 | 14 | 6 | 4 |
| 20 | 17 | 5,890 | 990 | 1,480 | 785 | 535 | 43 | 14 | 6 | 4 |
| 21 | 16 | 2,290 | 805 | 1,480 | 745 | 505 | 40 | 14 | 6 | 4 |
| 22 | 10 | 1,290 | 805 | 1,530 | 745 | 505 | 42 | 14 | 8 | 4 |
| 23 | 10 | 940 | 760 | 1,430 | 745 | 475 | 40 | 14 | 6 | 4 |
| 24 | 10 | 2,150 | 670 | 1,380 | 1,000 | 445 | 39 | 13 | 5 | 4 |
| 25 | 10 | 1,950 | 670 | 1,280 | 865 | 340 | 39 | 12 | 5 | 5 |
| 26 | 9 | 2,150 | 590 | 1,230 | 825 | 340 | 38 | 12 | 5 | 5 |
| 27 | 8 | 3,860 | 515 | 1,040 | 745 | 340 | 38 | 12 | 5 | 5 |
| 28 | 8 | 4,670 | 515 | 1,180 | 670 | 318 | 36 | 11 | 5 | 5 |
| 29 | 8 | 3,220 | ..... | 1,230 | 535 | 296 | 32 | 12 | 5 | 5 |
| 30 | 8 | 5,010 | ..... | 1,530 | 505 | 318 | 30 | 10 | 5 | 5 |
| 31 | 9 | 4,020 | ..... | 1,590 | ..... | 340 | ..... | 9 | 5 | ..... |

*Daily discharge, in second-feet, of South Eel River at Hearst, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 5 | 5 | 10 | 18 | 390 | 126 | 415 | 5,010 | 415 | 38 | 10 | 5 |
| 2 | 5 | 5 | 10 | 26 | 365 | 110 | 365 | 2,500 | 390 | 36 | 15 | 5 |
| 3 | 5 | 5 | 10 | 26 | 340 | 89 | 340 | 1,830 | 340 | 34 | 15 | 10 |
| 4 | 5 | 5 | 11 | 30 | 212 | 158 | 340 | 1,480 | 274 | 32 | 15 | 10 |
| 5 | 5 | 5 | 12 | 43 | 134 | 1,590 | 318 | 1,430 | 252 | 30 | 10 | 15 |
| 6 | 5 | 5 | 11 | 64 | 134 | 1,430 | 274 | 1,380 | 212 | 28 | 10 | 263 |
| 7 | 5 | 5 | 10 | 82 | 415 | 1,770 | 252 | 1,280 | 158 | 26 | 15 | 150 |
| 8 | 5 | 5 | 10 | 126 | 460 | 865 | 296 | 1,180 | 142 | 22 | 12 | 43 |
| 9 | 11 | 5 | 12 | 242 | 329 | 705 | 263 | 1,140 | 126 | 21 | 15 | 30 |
| 10 | 11 | 48 | 11 | 244 | 318 | 635 | 365 | 1,040 | 110 | 18 | 15 | 22 |
| 11 | 9 | 15 | 12 | 172 | 329 | 565 | 955 | 955 | 110 | 16 | 12 | 16 |
| 12 | 6 | 10 | 12 | 222 | 296 | 565 | 1,000 | 785 | 110 | 15 | 15 | 15 |
| 13 | 5 | 10 | 12 | 142 | 365 | 785 | 390 | 785 | 96 | 15 | 10 | 12 |
| 14 | 5 | 12 | 12 | 139 | 475 | 910 | 600 | 635 | 70 | 15 | 10 | 11 |
| 15 | 5 | 22 | 12 | 126 | 365 | 3,700 | 535 | 565 | 70 | 15 | 10 | 11 |
| 16 | 5 | 12 | 16 | 126 | 445 | 1,230 | 535 | 505 | 68 | 18 | 10 | 11 |
| 17 | 5 | 11 | 30 | 139 | 535 | 1,230 | 475 | 430 | 58 | 15 | 10 | 11 |
| 18 | 5 | 9 | 26 | 142 | 1,180 | 1,180 | 445 | 415 | 58 | 15 | 10 | 11 |
| 19 | 5 | 9 | 21 | 139 | 825 | 1,180 | 390 | 390 | 56 | 15 | 10 | 10 |
| 20 | 5 | 11 | 18 | 110 | 635 | 1,040 | 340 | 565 | 50 | 15 | 8 | 10 |
| 21 | 5 | 11 | 18 | 96 | 475 | 1,040 | 318 | 475 | 48 | 18 | 8 | 10 |
| 22 | 5 | 11 | 22 | 80 | 460 | 745 | 296 | 445 | 48 | 22 | 8 | 10 |
| 23 | 5 | 11 | 21 | 72 | 415 | 705 | 274 | 505 | 50 | 18 | 8 | 10 |
| 24 | 5 | 11 | 15 | 402 | 390 | 670 | 296 | 635 | 48 | 18 | 8 | 10 |
| 25 | 5 | 11 | 14 | 6,340 | 365 | 635 | 274 | 825 | 48 | 15 | 8 | 10 |
| 26 | 5 | 10 | 15 | 5,530 | 340 | 600 | 274 | 825 | 46 | 15 | 6 | 10 |
| 27 | 5 | 10 | 15 | 4,020 | 274 | 535 | 236 | 910 | 43 | 15 | 6 | 10 |
| 28 | 5 | 10 | 15 | 1,830 | 274 | 635 | 212 | 745 | 40 | 15 | 6 | 10 |
| 29 | 5 | 10 | 53 | 745 | 252 | 600 | 1,480 | 635 | 38 | 15 | 5 | 9 |
| 30 | 5 | 10 | 56 | 745 | ..... | 505 | 2,640 | 535 | 38 | 15 | 5 | 8 |
| 31 | 5 | ..... | 53 | 475 | ..... | 445 | ..... | 445 | ..... | 15 | 5 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 8 | 15 | 85 | 785 | 1,380 | 194 | 1,000 | 318 | 36 | 14 | 4 | ..... |
| 2 | 8 | 22 | 93 | 670 | 1,280 | 194 | 910 | 263 | 38 | 12 | 2 | ..... |
| 3 | 9 | 26 | 93 | 535 | 1,140 | 252 | 1,180 | 252 | 38 | 11 | 2 | ..... |
| 4 | 9 | 38 | 93 | 475 | 1,040 | 248 | 1,710 | 252 | 72 | 11 | 2 | ..... |
| 5 | 9 | 1,830 | 89 | 6,790 | 1,330 | 232 | 2,780 | 252 | 32 | 10 | 475 | ..... |
| 6 | 9 | 8,320 | 82 | 365 | 1,140 | 232 | 1,830 | 242 | 30 | 9 | 252 | ..... |
| 7 | 10 | 6,880 | 80 | 365 | 825 | 228 | 1,280 | 252 | 24 | 8 | 158 | ..... |
| 8 | 10 | 1,770 | 76 | 600 | 910 | 228 | 1,180 | 252 | 15 | 6 | 126 | ..... |
| 9 | 10 | 745 | 72 | 475 | 1,040 | 252 | 1,040 | 430 | 11 | 5 | 96 | ..... |
| 10 | 11 | 1,710 | 70 | 445 | 825 | 263 | 955 | 352 | 15 | 5 | 48 | ..... |
| 11 | 12 | 825 | 70 | 415 | 785 | 274 | 865 | 318 | 22 | 5 | 30 | ..... |
| 12 | 12 | 745 | 70 | 1,330 | 705 | 252 | 825 | 296 | 22 | 5 | 15 | ..... |
| 13 | 14 | 535 | 70 | 6,250 | 600 | 232 | 825 | 296 | 21 | 5 | 5 | ..... |
| 14 | 14 | 505 | 445 | 6,520 | 565 | 212 | 745 | 285 | 21 | 5 | 4 | ..... |
| 15 | 12 | 415 | 3,220 | 4,840 | 535 | 185 | 670 | 274 | 18 | 5 | 4 | ..... |
| 16 | 11 | 390 | 6,250 | 4,020 | 535 | 158 | 670 | 252 | 16 | 5 | 4 | ..... |
| 17 | 10 | 318 | 2,290 | 2,080 | 535 | 190 | 635 | 232 | 15 | 5 | 4 | ..... |
| 18 | 10 | 296 | 1,770 | 11,200 | 505 | 635 | 565 | 222 | 15 | 5 | 4 | ..... |
| 19 | 9 | 232 | 1,280 | 3,700 | 430 | 635 | 535 | 194 | 15 | 5 | 4 | ..... |
| 20 | 9 | 825 | 565 | 2,430 | 415 | 670 | 505 | 185 | 15 | 4 | 4 | ..... |
| 21 | 9 | 460 | 535 | 1,890 | 340 | 1,530 | 475 | 176 | 15 | 4 | 4 | ..... |
| 22 | 10 | 445 | 520 | 1,770 | 318 | 1,180 | 460 | 176 | 15 | 4 | 4 | ..... |
| 23 | 10 | 445 | 505 | 1,480 | 296 | 910 | 435 | 172 | 15 | 4 | ..... | ..... |
| 24 | 9 | 415 | 445 | 1,280 | 307 | 785 | 415 | 150 | 15 | 4 | ..... | ..... |
| 25 | 8 | 430 | 340 | 1,380 | 307 | 635 | 415 | 126 | 15 | 4 | ..... | ..... |
| 26 | 8 | 352 | 307 | 1,380 | 296 | 535 | 402 | 126 | 15 | 4 | ..... | ..... |
| 27 | 8 | 139 | 274 | 1,330 | 274 | 565 | 390 | 176 | 16 | 4 | ..... | ..... |
| 28 | 6 | 126 | 252 | 1,380 | 232 | 635 | 378 | 194 | 15 | 4 | ..... | ..... |
| 29 | 5 | 123 | 212 | 1,380 | ..... | 670 | 340 | 158 | 15 | 4 | ..... | ..... |
| 30 | 5 | 103 | 745 | 1,380 | ..... | 1,000 | 318 | 110 | 14 | 4 | ..... | ..... |
| 31 | 10 | ..... | 865 | 1,430 | ..... | 865 | ..... | 58 | ..... | 4 | ..... | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Dec. 8, 1910, to Mar. 6, 1911, poorly defined; Mar. 7, 1911, to Aug. 31, 1913, fairly well defined below 2,000 second-feet. High-water estimates are based on extension of rating curves and are only approximate.

*Monthly discharge of South Eel River at Hearst, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1910–11. | | | | | |
| December 8–31 | 260 | 8 | 54.2 | 2,580 | B. |
| January | 6,250 | 6 | 1,560 | 95,900 | C. |
| February | 3,070 | 515 | 1,430 | 79,400 | C. |
| March | 7,420 | 410 | 2,000 | 123,000 | C. |
| April | 4,020 | 505 | 1,240 | 73,800 | C. |
| May | 1,000 | 296 | 457 | 28,100 | B. |
| June | 445 | 30 | 135 | 8,030 | B. |
| July | 30 | 9 | 17.9 | 1,100 | C. |
| August | 10 | 5 | 6.9 | 424 | C. |
| September | 5 | 4 | 4.3 | 256 | C. |
| The period | | | | 413,000 | |
| 1911–12. | | | | | |
| October | 11 | 5 | 5.6 | 344 | C. |
| November | 48 | 5 | 10.6 | 631 | C. |
| December | 56 | 10 | 18.5 | 1,140 | C. |
| January | 6,340 | 18 | 732 | 45,000 | C. |
| February | 1,180 | 134 | 407 | 23,400 | B. |
| March | 3,700 | 89 | 870 | 53,500 | B. |
| April | 2,640 | 212 | 506 | 30,100 | B. |
| May | 5,010 | 390 | 1,010 | 62,100 | B. |
| June | 415 | 38 | 120 | 7,140 | B. |
| July | 38 | 15 | 20 | 1,230 | C. |
| August | 15 | 5 | 10 | 615 | C. |
| September | 263 | 5 | 25.6 | 1,520 | C. |
| The year | 6,340 | 5 | 312 | 227,000 | |
| 1912–13. | | | | | |
| October | 14 | 5 | 9.5 | 584 | C. |
| November | 8,320 | 15 | 983 | 58,500 | C. |
| December | 6,250 | 70 | 705 | 43,300 | C. |
| January | 11,200 | 365 | 2,170 | 140,000 | C. |
| February | 1,380 | 232 | 675 | 37,500 | B. |
| March | 1,530 | 158 | 486 | 29,900 | B. |
| April | 2,780 | 318 | 824 | 49,000 | B. |
| May | 430 | 58 | 227 | 14,000 | B. |
| June | 72 | 11 | 21.4 | 1,270 | C. |
| July | 14 | 4 | 5.9 | 363 | C. |
| August 1–22 | 475 | 2 | 56.9 | 2,480 | C. |
| The period | | | | 377,000 | |

## EEL RIVER AT TWO RIVERS, CAL.[1]

LOCATION.—In the SW.¼ sec. 31, T. 22 N., R. 13 W., at highway bridge at Two Rivers,[2] on Laytonville-Covelo road, and about 500 feet below junction of South and Middle Eel rivers. Burger Creek enters about 1 mile below the station.

RECORDS AVAILABLE.—November 15, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Inclined staff in three sections on right bank at bridge.

CHANNEL.—Solid rock and coarse gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable three-fourths mile below gage, from bridge, or by wading.

DIVERSIONS.—Snow Mountain Water & Power Co. diverts water from the South Eel above Hearst to the East Fork of Russian River for use in development of power at Potter Valley.

ACCURACY.—Rating curves well defined below gage height of 18 feet; results good. Estimates above that stage approximate, but cover only a very short period. Discharge for periods when gage was not read, estimated by comparison of record at this station with that of Middle Eel River near Covelo.

[1] Originally called Eel River near Laytonville.
[2] Northwestern Pacific Railroad station is Dos Rios.

*Discharge measurements of Eel River at Two Rivers, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 18 | R. C. Rice | 15.88 | 7,850 | May 27 | E. C. Murphy | 11.59 | 1,720 |
| 18 | do | 15.55 | 7,460 | 29 | do | 11.16 | 1,380 |
| Mar. 23 | E. C. Murphy | 14.06 | 4,380 | Aug. 25 | Charles Leidl | 7.34 | 22 |
| 24 | do | 13.55 | 3,580 | 25 | do | 7.34 | 22 |
| May 27 | do | 11.70 | 1,750 | | | | |

*Daily gage height, in feet, of Eel River at Two Rivers, Cal., for the year ending Sept. 30, 1913.*

[H. H. Beard, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.00 | 8.68 | ..... | 13.8 | 14.8 | 10.7 | 14.3 | 11.9 | 10.8 | ..... | 7.85 | ..... |
| 2 | 6.98 | 9.8 | ..... | 12.9 | 14.4 | 10.8 | 14.1 | 11.8 | 10.8 | ..... | 7.85 | ..... |
| 3 | 6.95 | 9.75 | ..... | 12.2 | 14.7 | 10.5 | 13.8 | 11.8 | 10.6 | ..... | 7.85 | ..... |
| 4 | 6.95 | 9.45 | ..... | 12.0 | 14.3 | 10.4 | 16.0 | 12.0 | 10.5 | ..... | 7.80 | ..... |
| 5 | 6.92 | 11.3 | ..... | 12.0 | 14.0 | 10.6 | 18.6 | 11.8 | 10.7 | ..... | 7.80 | 7.30 |
| 6 | 6.88 | 33.0 | ..... | 11.9 | 13.3 | 11.0 | 16.2 | 12.4 | 10.2 | ..... | 7.80 | ..... |
| 7 | 6.85 | 16.9 | ..... | 11.8 | 13.6 | 11.4 | 15.2 | 12.6 | 10.0 | ..... | 7.80 | ..... |
| 8 | 6.82 | 13.3 | ..... | 12.8 | 13.6 | 11.6 | 14.7 | 12.4 | ..... | ..... | 7.75 | 7.30 |
| 9 | 6.80 | 14.5 | ..... | 12.6 | 13.6 | 11.8 | 14.3 | 13.4 | ..... | ..... | 7.70 | ..... |
| 10 | 6.80 | 15.8 | ..... | 12.8 | 13.6 | 11.8 | 14.0 | 13.1 | ..... | 8.10 | 7.60 | ..... |
| 11 | 6.80 | 14.4 | ..... | 12.3 | 13.2 | 11.8 | 14.1 | 12.8 | ..... | 8.10 | ..... | ..... |
| 12 | 6.80 | 13.4 | ..... | 13.9 | 13.1 | 11.7 | 14.2 | 12.6 | ..... | 8.00 | ..... | 7.30 |
| 13 | 6.80 | 13.0 | ..... | 24.8 | 12.9 | 11.3 | 14.4 | 12.5 | ..... | 7.95 | 7.55 | ..... |
| 14 | 6.80 | 15.3 | 13.5 | 25.2 | 12.3 | 11.0 | 13.6 | 12.4 | ..... | 7.80 | ..... | ..... |
| 15 | 6.80 | 14.1 | 20.9 | 22.0 | 12.6 | 10.9 | 13.6 | 12.2 | ..... | 7.70 | ..... | ..... |
| 16 | 6.80 | ..... | 25.6 | 18.4 | 12.6 | 10.8 | 13.2 | 12.0 | ..... | 7.70 | ..... | ..... |
| 17 | 6.80 | 12.7 | 17.8 | 17.2 | 12.6 | 11.8 | 12.8 | 12.4 | ..... | 7.70 | 7.50 | 7.30 |
| 18 | 6.80 | 12.0 | 16.0 | 34.2 | 12.8 | 12.4 | 13.2 | 12.2 | ..... | 7.70 | ..... | ..... |
| 19 | 6.80 | 11.5 | 15.0 | 22.2 | 12.6 | 13.3 | 13.0 | 12.0 | ..... | 7.70 | ..... | ..... |
| 20 | 6.80 | 12.0 | 13.6 | 18.0 | 12.3 | 12.3 | 12.8 | 11.8 | ..... | 7.70 | 7.45 | ..... |
| 21 | 6.80 | 12.7 | 13.0 | 16.9 | 12.1 | 13.6 | 13.0 | ..... | ..... | 7.70 | ..... | ..... |
| 22 | 6.85 | 12.2 | 12.4 | 15.4 | 12.0 | 14.6 | 13.0 | ..... | ..... | 7.70 | ..... | ..... |
| 23 | 7.15 | 11.8 | 12.0 | 14.7 | 11.9 | 14.0 | 13.0 | ..... | ..... | 7.70 | ..... | ..... |
| 24 | 7.30 | 11.2 | 11.8 | 14.2 | 12.0 | 13.4 | 13.1 | 11.5 | ..... | 7.70 | 7.45 | ..... |
| 25 | 8.02 | ..... | 11.4 | 14.1 | 11.6 | 13.0 | 13.6 | ..... | ..... | 7.70 | 7.30 | ..... |
| 26 | 8.94 | ..... | 11.2 | 14.2 | 11.2 | 13.0 | 13.9 | 11.4 | ..... | 7.70 | ..... | 7.30 |
| 27 | 9.05 | ..... | 11.1 | 14.2 | 10.8 | 12.9 | 13.2 | 11.3 | ..... | 7.70 | ..... | ..... |
| 28 | 9.0 | ..... | 11.0 | 14.2 | 10.6 | 13.1 | 12.8 | 11.3 | ..... | 7.70 | 7.30 | ..... |
| 29 | 9.65 | ..... | 10.8 | 14.2 | ..... | 13.8 | 12.5 | 11.2 | ..... | 7.80 | ..... | ..... |
| 30 | 9.35 | ..... | 14.2 | 14.2 | ..... | 14.2 | 12.4 | 11.0 | ..... | 7.90 | ..... | 7.30 |
| 31 | 8.66 | ..... | 13.4 | 14.2 | ..... | 14.4 | ..... | 10.8 | ..... | 7.90 | 7.30 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 36.5 feet at noon; Jan. 18, 1913, 37 feet at 10 a. m.; Nov. 16 and Nov. 26 to Dec. 13, 1912, sand piled around second section of gage below 14 feet; markings on low-water section worn off by sand abrasion. May 21–25 and June 7 to July 9, 1913, rocks around temporary section, which was installed Dec. 25, 1912, prevented low-water readings. July 10 to Aug. 24, 1913, readings on observer's temporary gage near regular gage; corrected to datum.
Observer furnished voluntary readings after Aug. 10, 1913.

*Daily discharge, in second-feet, of Eel River at Two Rivers, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | |
| 1 | ..... | 49 | 522 | 2,100 | 950 | 1,920 | 27,500 | 2,200 | 284 | 34 | 24 |
| 2 | ..... | 48 | 444 | 1,740 | 885 | 1,830 | 14,900 | 2,100 | 271 | 30 | 25 |
| 3 | ..... | 46 | 174 | 1,560 | 765 | 1,740 | 7,790 | 1,920 | 223 | 41 | 28 |
| 4 | ..... | 49 | 174 | 1,240 | 765 | 1,560 | 6,690 | 1,740 | 183 | 41 | 28 |
| 5 | ..... | 51 | 202 | 1,240 | 1,830 | 1,480 | 6,870 | 1,560 | 174 | 41 | 78 |
| 6 | ..... | 63 | 202 | 1,090 | 5,370 | 1,400 | 7,410 | 1,400 | 174 | 41 | 1,740 |
| 7 | ..... | 118 | 522 | 1,740 | 8,170 | 1,400 | 6,350 | 1,240 | 158 | 36 | 1,090 |
| 8 | ..... | 118 | 1,240 | 3,940 | 4,920 | 1,480 | 5,070 | 1,090 | 158 | 33 | 463 |
| 9 | ..... | 82 | 2,300 | 4,070 | 3,180 | 1,560 | 5,070 | 950 | 137 | 31 | 279 |
| 10 | ..... | 72 | 2,100 | 3,300 | 2,720 | 1,830 | 4,070 | 950 | 161 | 28 | 232 |
| 11 | ..... | 64 | 2,010 | 2,100 | 2,300 | 3,180 | 3,680 | 825 | 144 | 30 | 143 |
| 12 | ..... | 63 | 1,020 | 2,010 | 2,940 | 3,940 | 3,550 | 765 | 128 | 30 | 112 |
| 13 | ..... | 64 | 2,100 | 2,200 | 6,350 | 3,940 | 3,300 | 765 | 120 | 30 | 94 |
| 14 | ..... | 61 | 1,740 | 2,500 | 5,530 | 3,940 | 2,500 | 710 | 112 | 27 | 82 |
| 15 | 258 | 57 | 1,240 | 2,100 | 13,100 | 2,300 | 2,300 | 685 | 106 | 25 | 73 |
| 16 | 342 | 63 | 1,160 | 1,920 | 9,810 | 2,300 | 2,300 | 589 | 98 | 25 | 67 |
| 17 | 212 | 212 | 1,320 | 5,530 | 6,010 | 2,100 | 2,300 | 566 | 88 | 26 | 62 |
| 18 | 151 | 174 | 1,090 | 9,600 | 4,630 | 2,200 | 2,100 | 502 | 84 | 32 | 59 |
| 19 | 106 | 128 | 1,020 | 5,690 | 3,940 | 1,830 | 1,900 | 444 | 78 | 32 | 50 |
| 20 | 80 | 104 | 825 | 4,070 | 3,420 | 1,650 | 2,300 | 426 | 73 | 30 | 47 |
| 21 | 72 | 88 | 685 | 3,810 | 2,940 | 1,560 | 2,300 | 482 | 69 | 28 | 47 |
| 22 | 70 | 74 | 612 | 2,720 | 2,720 | 1,400 | 2,100 | 463 | 63 | 28 | 50 |
| 23 | 69 | 70 | 660 | 2,200 | 2,300 | 1,480 | 2,100 | 482 | 63 | 27 | 40 |
| 24 | 66 | 80 | 710 | 1,920 | 2,610 | 1,560 | 2,300 | 463 | 62 | 27 | 39 |
| 25 | 57 | 78 | 45,200 | 1,650 | 2,500 | 1,560 | 3,810 | 426 | 58 | 26 | 40 |
| 26 | 57 | 70 | 37,900 | 1,400 | 2,300 | 1,400 | 3,680 | 391 | 57 | 26 | 41 |
| 27 | 55 | 174 | 15,700 | 1,320 | 2,300 | 1,240 | 3,940 | 358 | 57 | 26 | 41 |
| 28 | 52 | 612 | 7,230 | 1,020 | 2,500 | 1,240 | 3,180 | 327 | 48 | 26 | 41 |
| 29 | 51 | 374 | 5,530 | 1,090 | 2,500 | 12,100 | 2,830 | 312 | 44 | 24 | 41 |
| 30 | 51 | 298 | 2,830 | ..... | 2,300 | 12,800 | 2,720 | 284 | 41 | 25 | 41 |
| 31 | ..... | 271 | 2,400 | ..... | 2,200 | ..... | 2,400 | ..... | 37 | 25 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 41 | 230 | 1,050 | 4,490 | 5,360 | 1,090 | 4,610 | 1,940 | 1,150 | 270 | 77 | 19 |
| 2 | 40 | 612 | 1,000 | 3,300 | 4,750 | 1,150 | 4,330 | 1,860 | 1,150 | 255 | 77 | 19 |
| 3 | 39 | 589 | 940 | 2,500 | 5,200 | 970 | 3,940 | 1,860 | 1,030 | 235 | 77 | 19 |
| 4 | 39 | 463 | 890 | 2,300 | 4,610 | 915 | 7,430 | 2,020 | 970 | 220 | 70 | 19 |
| 5 | 38 | 1,650 | 830 | 2,300 | 4,200 | 1,030 | 13,200 | 1,860 | 1,090 | 200 | 70 | 19 |
| 6 | 36 | 60,400 | 780 | 2,200 | 3,330 | 1,270 | 7,810 | 2,380 | 805 | 185 | 70 | 19 |
| 7 | 35 | 10,000 | 720 | 2,100 | 3,690 | 1,550 | 6,010 | 2,580 | 705 | 165 | 70 | 19 |
| 8 | 34 | 3,810 | 670 | 3,180 | 3,690 | 1,700 | 5,200 | 2,380 | 675 | 150 | 63 | 19 |
| 9 | 33 | 5,530 | 615 | 2,940 | 3,690 | 1,860 | 4,610 | 3,450 | 655 | 130 | 56 | 19 |
| 10 | 33 | 7,790 | 650 | 3,180 | 3,690 | 1,860 | 4,200 | 3,110 | 640 | 116 | 44 | 19 |
| 11 | 33 | 5,370 | 700 | 2,610 | 3,220 | 1,860 | 4,330 | 2,780 | 620 | 116 | 42 | 19 |
| 12 | 33 | 3,940 | 800 | 4,630 | 3,110 | 1,780 | 4,470 | 2,580 | 605 | 100 | 40 | 19 |
| 13 | 33 | 3,420 | 1,110 | 32,700 | 2,890 | 1,480 | 4,750 | 2,480 | 585 | 92 | 39 | 19 |
| 14 | 33 | 6,870 | 4,070 | 34,000 | 2,290 | 1,270 | 3,690 | 2,380 | 570 | 70 | 38 | 19 |
| 15 | 33 | 4,920 | 17,900 | 23,800 | 2,580 | 1,210 | 3,690 | 2,200 | 550 | 56 | 36 | 19 |
| 16 | 33 | 4,000 | 35,300 | 13,600 | 2,580 | 1,150 | 3,220 | 2,020 | 535 | 56 | 35 | 19 |
| 17 | 33 | 3,060 | 12,100 | 10,700 | 2,580 | 1,860 | 2,780 | 2,380 | 515 | 56 | 34 | 19 |
| 18 | 33 | 2,300 | 8,170 | 64,600 | 2,780 | 2,380 | 3,220 | 2,200 | 500 | 56 | 33 | 19 |
| 19 | 33 | 1,830 | 6,350 | 23,500 | 2,580 | 3,330 | 3,000 | 2,020 | 480 | 56 | 31 | 19 |
| 20 | 33 | 2,300 | 4,210 | 11,700 | 2,290 | 2,290 | 2,780 | 1,860 | 465 | 56 | 30 | 19 |
| 21 | 33 | 3,060 | 3,420 | 9,230 | 2,110 | 3,690 | 3,000 | 1,800 | 445 | 56 | 30 | 19 |
| 22 | 35 | 2,500 | 2,720 | 6,350 | 2,020 | 5,050 | 3,000 | 1,740 | 430 | 56 | 30 | 19 |
| 23 | 48 | 2,100 | 2,300 | 5,200 | 1,940 | 4,200 | 3,000 | 1,680 | 410 | 56 | 30 | 19 |
| 24 | 57 | 1,560 | 2,100 | 4,470 | 2,020 | 3,450 | 3,110 | 1,620 | 395 | 56 | 30 | 19 |
| 25 | 120 | 1,480 | 1,740 | 4,330 | 1,700 | 3,000 | 3,690 | 1,580 | 375 | 56 | 22 | 19 |
| 26 | 295 | 1,400 | 1,560 | 4,470 | 1,410 | 3,000 | 4,070 | 1,550 | 360 | 56 | 21 | 19 |
| 27 | 327 | 1,340 | 1,480 | 4,470 | 1,150 | 2,890 | 3,220 | 1,480 | 340 | 56 | 20 | 19 |
| 28 | 318 | 1,280 | 1,400 | 4,470 | 1,030 | 3,110 | 2,780 | 1,480 | 325 | 56 | 19 | 19 |
| 29 | 544 | 1,200 | 1,240 | 4,470 | ..... | 3,940 | 2,480 | 1,410 | 305 | 70 | 19 | 19 |
| 30 | 426 | 1,120 | 5,070 | 4,470 | ..... | 4,470 | 2,380 | 1,270 | 290 | 84 | 19 | 19 |
| 31 | 225 | ..... | 3,940 | 4,470 | ..... | 4,750 | ..... | 1,150 | ..... | 84 | 19 | ..... |

NOTE.—Daily discharge determined from rating curves fairly well defined below about 12,000 second-feet, applicable as follows: Nov. 15, 1911, to Jan. 18, 1913; Jan. 19 to Sept. 30, 1913. High-water estimates are based on extension of rating curves and are only approximate.

*Monthly discharge of Eel River at Two Rivers, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911–12. | | | | | |
| November 15–30 | 342 | 51 | 109 | 3,460 | B. |
| December | 612 | 46 | 125 | 7,690 | B. |
| January | 45,200 | 174 | 4,540 | 279,000 | C. |
| February | 9,600 | 1,020 | 2,750 | 153,000 | B. |
| March | 13,100 | 765 | 3,700 | 228,000 | B. |
| April | 12,800 | 1,240 | 2,660 | 158,000 | B. |
| May | 27,500 | 1,920 | 4,820 | 296,000 | B. |
| June | 2,200 | 284 | 847 | 50,400 | B. |
| July | 284 | 37 | 115 | 7,070 | B. |
| August | 41 | 24 | 30.0 | 1,840 | C. |
| September | 1,740 | 24 | 173 | 10,300 | C. |
| The period | 45,200 | 24 | ..... | 1,190,000 | |
| 1912–13. | | | | | |
| October | 544 | 33 | 101 | 6,210 | C. |
| November | 60,400 | 230 | 4,870 | 290,000 | C. |
| December | 35,300 | 615 | 4,060 | 250,000 | C. |
| January | 64,600 | 2,100 | 9,890 | 608,000 | C. |
| February | 5,360 | 1,030 | 2,950 | 164,000 | B. |
| March | 5,050 | 915 | 2,370 | 146,000 | B. |
| April | 13,200 | 2,380 | 4,260 | 253,000 | B. |
| May | 3,450 | 1,150 | 2,040 | 125,000 | B. |
| June | 1,150 | 290 | 599 | 35,600 | C. |
| July | 270 | 56 | 107 | 6,580 | C. |
| August | 77 | 19 | 41.6 | 2,560 | C. |
| September | 19 | 19 | 19.0 | 1,130 | C. |
| The year | 64,600 | 19 | 2,610 | 1,890,000 | |

## EEL RIVER AT SCOTIA, CAL.

LOCATION.—In sec. 18, T. 1 N., R. 1 E., at Wildwood Ferry, about half a mile northeast of Scotia. Laribee Creek enters about 14 miles above and Van Duzen River 7 miles below the station.

RECORDS AVAILABLE.—December 15, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in four sections on left bank. Three lower sections are 70 feet above ferry; upper section is at mouth of Dean Creek, 150 feet farther upstream.

CHANNEL.—Solid rock and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from car on ferry cable or by wading.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Eel River at Scotia, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 8 | 9.78 | 180 | Jan. 14 | 32.75 | 114,000 | May 19 | 12.41 | 3,640 |
| 14 | 9.78 | 181 | 15 | 26.95 | 71,200 | June 23 | 10.82 | 840 |
| Jan. 12 | 15.90 | 16,500 | Feb. 7 | 13.80 | 7,670 | Aug. 27 | 9.67 | 131 |
| 13 | 24.65 | 61,700 | Mar. 22 | 15.83 | 15,100 | Sept. 6 | 9.68 | 129 |

*Daily gage height, in feet, of Eel River at Scotia, Cal., for the year ending Sept. 30, 1913.*

[A. Batini, F. Galli, and A. Scatena, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 11.1 | 11.95 | 15.0 | 14.9 | 11.95 | 14.5 | 12.5 | 11.6 | ..... | ..... | ..... |
| 2 | ..... | 11.0 | 11.95 | 14.6 | 14.9 | 12.0 | 15.2 | 12.4 | 11.55 | ..... | ..... | ..... |
| 3 | ..... | 11.6 | 11.9 | 14.3 | 14.9 | 12.3 | 14.8 | 12.3 | 11.5 | ..... | ..... | ..... |
| 4 | ..... | 11.6 | 11.8 | 14.0 | 14.9 | 12.5 | 15.6 | 12.2 | 11.45 | ..... | ..... | ..... |
| 5 | ..... | 12.9 | 11.8 | 13.7 | 14.9 | 12.5 | 19.4 | 12.2 | 11.4 | ..... | ..... | 9.68 |
| 6 | ..... | 31.4 | 11.7 | 13.3 | 14.9 | 12.5 | 18.8 | 12.1 | 11.4 | ..... | ..... | 9.68 |
| 7 | ..... | 19.2 | 11.65 | 13.0 | 14.9 | 12.5 | 17.4 | 12.1 | 11.35 | ..... | ..... | 9.67 |
| 8 | 9.78 | 16.5 | 11.6 | 14.4 | 14.9 | 12.5 | 15.8 | 12.0 | 11.3 | ..... | ..... | 9.67 |
| 9 | 9.78 | 16.4 | 11.6 | 15.2 | 14.8 | 12.5 | 15.6 | 12.1 | 11.25 | ..... | ..... | 9.66 |
| 10 | 9.78 | 19.0 | 11.55 | 14.4 | 14.8 | 12.4 | 15.2 | 12.7 | 11.2 | ..... | ..... | 9.65 |
| 11 | 9.78 | 18.6 | 11.5 | 14.0 | 14.8 | 12.4 | 15.0 | 13.1 | 11.2 | ..... | ..... | 9.63 |
| 12 | 9.78 | 18.2 | 11.85 | 15.9 | 14.8 | 12.4 | 14.7 | 13.4 | 11.15 | ..... | ..... | 9.62 |
| 13 | 9.78 | 15.7 | 12.4 | 25.1 | 14.7 | 12.3 | 14.9 | 13.3 | 11.7 | ..... | ..... | 9.60 |
| 14 | 9.78 | 16.0 | 14.0 | 31.6 | 14.5 | 12.2 | 15.0 | 13.0 | 11.15 | ..... | ..... | 9.59 |
| 15 | 9.78 | 17.0 | 21.6 | 25.7 | 14.3 | 12.1 | 14.9 | 12.7 | 10.95 | ..... | ..... | 9.57 |
| 16 | 9.78 | 16.1 | 25.5 | 22.7 | 14.2 | 12.0 | 14.8 | 12.4 | 10.9 | ..... | ..... | 9.56 |
| 17 | 9.78 | 15.0 | 24.6 | 22.0 | 14.0 | 11.95 | 14.7 | 12.3 | 10.85 | ..... | ..... | 9.55 |
| 18 | 9.76 | 14.0 | 20.5 | 32.7 | 13.8 | 11.95 | 14.6 | 12.1 | 10.8 | ..... | ..... | 9.54 |
| 19 | 9.75 | 14.0 | 18.0 | 28.6 | 13.6 | 12.9 | 14.5 | 12.1 | 10.9 | ..... | ..... | 9.52 |
| 20 | 9.75 | 14.8 | 16.4 | 23.5 | 13.3 | 14.1 | 14.4 | 12.2 | 10.95 | ..... | ..... | 9.51 |
| 21 | 9.75 | 14.8 | 15.2 | 20.5 | 13.1 | 13.6 | 14.2 | 12.1 | 10.85 | ..... | ..... | 9.50 |
| 22 | 9.76 | 14.2 | 14.4 | 17.9 | 12.8 | 13.8 | 14.1 | 12.1 | 10.85 | ..... | ..... | 9.50 |
| 23 | 9.86 | 13.2 | 14.1 | 16.5 | 12.6 | 15.8 | 13.8 | 12.1 | 10.8 | ..... | ..... | 9.48 |
| 24 | 10.05 | 12.9 | 13.8 | 15.8 | 12.5 | 16.0 | 13.6 | 12.1 | 10.8 | ..... | ..... | 9.47 |
| 25 | 10.42 | 12.7 | 13.6 | 15.5 | 12.3 | 15.6 | 13.3 | 12.0 | 10.75 | ..... | ..... | 9.46 |
| 26 | 10.6 | 12.6 | 13.4 | 15.3 | 12.2 | 15.4 | 13.1 | 12.0 | 10.7 | ..... | ..... | 9.46 |
| 27 | 10.9 | 12.4 | 13.2 | 15.1 | 12.1 | 15.2 | 13.0 | 12.0 | 10.7 | ..... | 9.67 | 9.46 |
| 28 | 11.3 | 12.3 | 13.0 | 15.1 | 12.0 | 14.9 | 12.8 | 11.95 | 10.7 | ..... | ..... | 9.45 |
| 29 | 11.45 | 12.2 | 12.7 | 15.0 | ..... | 14.4 | 12.7 | 11.85 | 10.7 | ..... | ..... | 9.48 |
| 30 | 11.45 | 12.1 | 13.3 | 15.0 | ..... | 14.9 | 12.6 | 11.75 | 10.65 | ..... | ..... | 9.45 |
| 31 | 11.4 | ..... | 15.6 | 15.0 | ..... | 14.6 | ..... | 11.7 | ..... | ..... | ..... | ..... |

NOTE.—Observer's gage-height record from about July 1 to Sept. 4, 1913, is unreliable and has not been published.

Maximum recorded gage heights: Nov. 6, 1912, 35.0 feet at 6 p. m.; Jan. 14, 1913, 33.0 feet at 8 a. m.; Jan. 18, 1913, 37.2 feet at 6 p. m.

*Daily discharge, in second-feet, of Eel River at Scotia, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 181 | 1,290 | 2,820 | 12,000 | 11,600 | 2,640 | 10,000 | 3,900 | 1,970 | 650 | 225 | 130 |
| 2 | 181 | 1,150 | 2,820 | 10,400 | 11,600 | 2,750 | 12,800 | 3,660 | 1,880 | 625 | 222 | 130 |
| 3 | 181 | 2,130 | 2,710 | 9,300 | 11,600 | 3,420 | 11,200 | 3,420 | 1,800 | 600 | 219 | 130 |
| 4 | 181 | 2,130 | 2,510 | 8,300 | 11,600 | 3,900 | 14,400 | 3,190 | 1,720 | 580 | 216 | 130 |
| 5 | 181 | 5,070 | 2,510 | 7,400 | 11,600 | 3,900 | 31,600 | 3,190 | 1,630 | 560 | 213 | 131 |
| 6 | 181 | 103,000 | 2,320 | 6,200 | 11,600 | 3,900 | 28,600 | 2,970 | 1,630 | 540 | 210 | 131 |
| 7 | 181 | 30,600 | 2,220 | 5,340 | 11,600 | 3,900 | 22,100 | 2,970 | 1,550 | 250 | 206 | 129 |
| 8 | 181 | 18,000 | 2,130 | 9,650 | 11,600 | 3,900 | 15,200 | 2,750 | 1,470 | 500 | 203 | 129 |
| 9 | 181 | 17,600 | 2,130 | 12,800 | 11,200 | 3,900 | 14,400 | 2,970 | 1,400 | 480 | 200 | 128 |
| 10 | 181 | 29,600 | 2,040 | 9,650 | 11,200 | 3,660 | 12,800 | 4,400 | 1,320 | 560 | 196 | 126 |
| 11 | 181 | 27,600 | 1,950 | 8,300 | 11,200 | 3,600 | 12,000 | 5,480 | 1,320 | 440 | 193 | 123 |
| 12 | 181 | 25,700 | 2,610 | 15,600 | 11,200 | 3,600 | 10,800 | 6,360 | 1,250 | 420 | 190 | 121 |
| 13 | 181 | 14,800 | 3,810 | 62,600 | 10,800 | 3,420 | 11,600 | 6,060 | 2,150 | 400 | 186 | 118 |
| 14 | 181 | 16,000 | 8,300 | 104,000 | 10,000 | 3,190 | 12,000 | 5,200 | 1,250 | 380 | 183 | 117 |
| 15 | 181 | 20,300 | 42,600 | 66,200 | 9,300 | 2,970 | 11,600 | 4,400 | 990 | 360 | 180 | 115 |
| 16 | 181 | 16,400 | 65,000 | 48,600 | 8,950 | 2,750 | 11,200 | 3,660 | 930 | 352 | 176 | 114 |
| 17 | 181 | 12,000 | 59,600 | 44,800 | 8,300 | 2,640 | 10,800 | 3,420 | 875 | 344 | 172 | 113 |
| 18 | 177 | 8,300 | 37,100 | 111,000 | 7,630 | 2,640 | 10,400 | 2,970 | 820 | 336 | 168 | 112 |
| 19 | 176 | 8,300 | 24,800 | 84,500 | 6,980 | 4,930 | 10,000 | 2,970 | 930 | 328 | 163 | 110 |
| 20 | 176 | 11,200 | 17,600 | 53,000 | 6,060 | 8,600 | 9,650 | 3,190 | 990 | 320 | 159 | 109 |
| 21 | 176 | 11,200 | 12,800 | 37,100 | 5,480 | 6,980 | 8,950 | 2,970 | 875 | 312 | 155 | 108 |
| 22 | 177 | 8,950 | 9,650 | 24,400 | 4,660 | 7,630 | 8,600 | 2,970 | 875 | 304 | 151 | 108 |
| 23 | 200 | 5,900 | 8,600 | 18,000 | 4,150 | 15,200 | 7,630 | 2,970 | 820 | 296 | 146 | 106 |
| 24 | 270 | 5,070 | 7,700 | 15,200 | 3,900 | 16,000 | 6,980 | 2,970 | 820 | 288 | 142 | 106 |
| 25 | 532 | 4,550 | 7,100 | 14,000 | 3,420 | 14,400 | 6,060 | 2,750 | 770 | 280 | 138 | 105 |
| 26 | 690 | 4,300 | 6,500 | 13,200 | 3,190 | 13,600 | 5,480 | 2,750 | 720 | 272 | 133 | 105 |
| 27 | 1,020 | 3,810 | 5,900 | 12,400 | 2,970 | 12,800 | 5,200 | 2,750 | 720 | 264 | 129 | 105 |
| 28 | 1,600 | 3,580 | 5,340 | 12,400 | 2,750 | 11,600 | 4,660 | 2,640 | 720 | 256 | 130 | 104 |
| 29 | 1,860 | 3,350 | 4,550 | 12,000 | ..... | 9,650 | 4,400 | 2,440 | 720 | 248 | 130 | 106 |
| 30 | 1,860 | 3,130 | 6,200 | 12,000 | ..... | 11,600 | 4,150 | 2,240 | 674 | 240 | 130 | 104 |
| 31 | 1,770 | ..... | 14,400 | 12,000 | ..... | 10,400 | ..... | 2,150 | ..... | 232 | 130 | ..... |

NOTE.—Daily discharge determined from rating curves fairly well defined below about 12,000 second-feet, applicable as follows: Oct. 1, 1912, to Jan. 17, 1913 (same as that used for May 2 to Sept. 30, 1912); and Jan. 18 to Sept. 30, 1913. Discharge estimated as follows: Oct. 1–7, 1912; July 1 to Sept. 4, 1913, by comparison of records at this station with those at other stations in Eel River drainage basin.

*Monthly discharge of Eel River at Scotia, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 1,860 | 176 | 444 | 27,300 | B. |
| November | 103,000 | 1,150 | 14,200 | 845,000 | B. |
| December | 65,000 | 1,950 | 12,100 | 744,000 | B. |
| January | 111,000 | 5,340 | 28,100 | 1,730,000 | B. |
| February | 11,600 | 2,750 | 8,430 | 468,000 | B. |
| March | 16,000 | 2,640 | 6,580 | 405,000 | B. |
| April | 31,600 | 4,150 | 11,500 | 684,000 | B. |
| May | 6,360 | 2,150 | 3,440 | 212,000 | B. |
| June | 2,150 | 674 | 1,190 | 70,800 | B. |
| July | 650 | 232 | 393 | 24,200 | C. |
| August | 225 | 129 | 174 | 10,700 | C. |
| September | 131 | 104 | 117 | 6,960 | B. |
| The year | 111,000 | 104 | 7,220 | 5,230,000 | |

## MIDDLE EEL RIVER NEAR COVELO, CAL.

LOCATION.—In the E. ½ sec. 36, T. 23 N., R. 12 W., in California National Forest, 1 mile below highway bridge, one-fourth mile west of Covelo ranger station, and about 6 miles east of Covelo. Williams Creek enters about half a mile above the station.

RECORDS AVAILABLE.—August 22, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Inclined staff in two sections on left bank.

CHANNEL.—Small bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading. When measurements were made from the bridge the discharge of Williams Creek was added to give flow at gage.

ACCURACY.—Measurements made in 1914 define the rating curve for high water. Results good.

COOPERATION.—Gage-height record furnished by United States Forest Service.

*Discharge measurements of Middle Eel River near Covelo, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Dec. 20 | R. C. Rice | 11.20 | 1,700 | May 28 | E. C. Murphy | 10.75 | 1,100 |
| 22 | Rice and Brereton | 10.60 | 1,140 | Aug. 24 | Charles Leidl | 7.40 | 17 |
| Mar. 25 | E. C. Murphy | 10.25 | 805 | 24 | do | 7.40 | 17 |
| 25 | do | 10.25 | 786 | | | | |

*Daily gage height, in feet, of Middle Eel River near Covelo, Cal., for the year ending Sept. 30, 1913.*

[C. V. Brereton, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6 | 8.6 | 9.4 | 11.6 | 11.7 | 9.9 | ..... | 10.7 | 10.3 | 8.7 | 8.0 | 7.5 |
| 2 | 7.6 | 8.55 | 9.3 | 11.4 | 11.4 | 10.0 | ..... | 10.6 | 10.3 | 8.7 | 7.9 | 7.5 |
| 3 | 7.6 | 8.5 | 9.3 | 11.0 | 11.2 | 10.3 | ..... | 10.8 | 10.25 | 8.7 | 7.7 | 7.5 |
| 4 | 7.6 | 8.5 | 9.25 | 10.6 | 11.1 | 10.35 | ..... | 11.0 | 10.1 | 8.6 | 7.7 | 7.45 |
| 5 | 7.6 | 10.8 | 9.2 | 10.2 | 11.0 | 10.4 | ..... | 11.2 | 10.0 | 8.55 | 7.7 | 7.45 |
| 6 | 7.6 | 19.3 | 9.1 | 10.0 | 11.0 | 10.5 | ..... | 11.4 | 9.95 | 8.5 | 7.7 | 7.4 |
| 7 | 7.6 | 13.4 | 9.05 | 10.2 | 11.0 | 10.6 | ..... | 11.5 | 9.8 | 8.5 | 7.7 | 7.4 |
| 8 | 7.6 | 11.3 | 9.0 | 10.6 | 11.1 | 10.9 | ..... | 11.8 | 9.75 | 8.3 | 7.7 | 7.4 |
| 9 | 7.6 | 12.6 | 8.95 | 10.3 | 11.2 | 11.1 | ..... | 12.0 | 9.5 | 8.1 | 7.7 | 7.35 |
| 10 | 7.5 | 12.5 | 9.0 | 10.1 | 11.2 | 11.2 | ..... | 11.8 | 9.45 | 7.9 | 7.7 | 7.35 |
| 11 | 7.5 | 12.0 | 9.1 | 9.8 | 11.3 | 11.0 | 12.8 | 11.5 | 9.4 | 7.7 | 7.7 | 7.35 |
| 12 | 7.5 | 11.7 | 9.2 | 11.5 | 11.2 | 10.9 | 12.5 | 11.4 | 9.35 | 7.65 | 7.9 | 7.3 |
| 13 | 7.5 | 11.4 | 9.45 | 13.6 | 11.1 | 10.8 | 12.4 | 11.2 | 9.3 | 7.65 | 7.9 | 7.3 |
| 14 | 7.45 | ..... | 9.9 | 13.2 | 11.1 | 10.6 | 11.8 | 11.1 | 9.2 | 7.65 | 7.9 | 7.3 |
| 15 | 7.45 | ..... | 12.0 | 12.5 | 11.2 | 10.4 | 11.5 | 11.2 | 9.2 | 7.65 | 7.7 | 7.3 |
| 16 | 7.45 | ..... | 14.5 | 11.6 | 11.3 | 10.4 | 11.2 | 11.3 | 9.15 | 7.65 | 7.7 | 7.3 |
| 17 | 7.45 | 10.8 | 14.4 | 11.2 | 11.5 | 10.8 | 11.3 | 11.4 | 9.1 | 7.65 | 7.65 | 7.3 |
| 18 | 7.45 | 10.7 | 14.4 | 15.3 | 11.2 | 10.7 | 11.4 | 11.2 | 9.5 | 7.65 | 7.65 | 7.2 |
| 19 | 7.45 | 10.6 | 12.0 | 13.6 | 11.0 | 10.6 | 11.4 | 11.0 | 9.0 | 7.65 | 7.65 | 7.2 |
| 20 | 7.45 | 10.5 | 11.3 | 11.8 | 10.9 | 10.5 | 11.4 | 11.1 | 8.9 | 7.65 | 7.6 | 7.2 |
| 21 | 7.5 | 10.3 | 10.9 | 11.4 | 10.8 | 10.5 | 11.4 | 11.1 | 8.9 | 7.65 | 7.6 | 7.2 |
| 22 | 7.55 | 10.2 | 10.6 | 11.2 | 10.7 | 10.5 | 11.6 | 11.2 | 8.9 | 7.65 | 7.55 | 7.2 |
| 23 | 8.4 | 10.0 | 10.6 | 11.0 | 10.6 | 10.4 | 11.5 | 11.1 | 8.75 | 7.65 | 7.5 | 7.2 |
| 24 | 8.4 | 9.8 | 10.1 | 10.8 | 10.4 | 10.3 | 11.8 | 11.0 | 8.75 | 7.65 | 7.45 | 7.15 |
| 25 | 8.4 | 9.7 | 10.0 | 10.9 | 10.3 | 10.25 | 12.2 | 11.0 | 8.8 | 7.65 | 7.45 | 7.15 |
| 26 | 8.5 | 9.6 | 9.95 | 10.9 | 10.2 | 10.25 | 12.0 | 11.0 | 8.8 | 7.65 | 7.4 | 7.15 |
| 27 | 8.6 | 9.6 | 9.9 | 11.0 | 10.0 | 10.25 | 11.7 | 11.0 | 8.9 | 8.0 | 7.35 | 7.15 |
| 28 | 8.7 | 9.5 | 9.9 | 11.2 | 9.9 | 11.0 | 11.4 | 10.8 | 9.25 | 8.3 | 7.35 | 7.15 |
| 29 | 9.4 | 9.45 | 11.0 | 11.2 | ..... | 11.8 | 11.1 | 10.4 | 8.75 | 8.25 | 7.35 | 7.2 |
| 30 | 8.9 | 9.4 | 12.3 | 11.3 | ..... | 11.8 | 10.9 | 10.35 | 8.5 | 8.2 | 7.35 | 7.2 |
| 31 | 8.7 | ..... | 12.0 | 11.4 | ..... | 11.9 | ..... | 10.3 | ..... | 8.2 | 7.35 | ..... |

NOTE.—Nov. 6, 1912, mean gage height computed from graph., maximum recorded gage height, 22 feet at about 3 a. m. Only one reading secured Jan. 18, 1913.

*Daily discharge, in second-feet, of Middle Eel River near Covelo, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | ..... | 12 | 11 | ..... | 12 | 21 | ..... | 10 |
| 2 | ..... | 12 | 12 | ..... | 12 | 22 | 18 | 11 |
| 3 | ..... | 12 | 13 | ..... | 12 | 23 | 14 | 11 |
| 4 | ..... | 12 | 14 | ..... | 12 | 24 | 12 | 11 |
| 5 | ..... | 11 | 15 | ..... | 12 | 25 | 14 | 12 |
| 6 | ..... | 12 | 16 | ..... | 12 | 26 | 12 | 12 |
| 7 | ..... | 12 | 17 | ..... | 12 | 27 | 13 | 13 |
| 8 | ..... | 12 | 18 | ..... | 11 | 28 | 12 | 13 |
| 9 | ..... | 12 | 19 | ..... | 11 | 29 | 12 | 14 |
| 10 | ..... | 12 | 20 | ..... | 10 | 30 | 11 | 14 |
| | | | | | | 31 | 12 | ..... |

*Daily gage height, in feet, of Middle Eel River near Covelo, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 14 | 14 | 22 | 46 | 900 | 516 | 1,040 | 6,080 | 1,520 | 172 | 38 | 12 |
| 2 | 14 | 14 | 24 | 46 | 900 | 466 | 1,010 | 3,210 | 1,440 | 172 | 38 | 14 |
| 3 | 14 | 14 | 27 | 56 | 760 | 420 | 1,040 | 3,340 | 1,280 | 148 | 38 | 20 |
| 4 | 14 | 14 | 27 | 68 | 760 | 420 | 900 | 3,410 | 1,120 | 148 | 38 | 27 |
| 5 | 14 | 14 | 27 | 68 | 760 | 466 | 900 | 3,480 | 1,040 | 128 | 38 | 35 |
| 6 | 11 | 14 | 35 | 68 | 760 | 1,040 | 1,010 | 3,900 | 900 | 128 | 35 | 1,960 |
| 7 | 13 | 15 | 56 | 262 | 1,360 | 1,040 | 970 | 3,760 | 760 | 110 | 32 | 600 |
| 8 | 14 | 16 | 51 | 466 | 2,830 | 900 | 1,040 | 3,480 | 760 | 110 | 30 | 262 |
| 9 | 15 | 16 | 42 | 970 | 1,690 | 760 | 970 | 3,040 | 630 | 110 | 27 | 148 |
| 10 | 18 | 87 | 38 | 630 | 1,440 | 630 | 1,870 | 2,590 | 570 | 110 | 24 | 110 |
| 11 | 18 | 66 | 38 | 466 | 1,440 | 630 | 1,600 | 2,590 | 516 | 94 | 22 | 80 |
| 12 | 16 | 38 | 32 | 376 | 1,360 | 760 | 1,280 | 2,590 | 516 | 94 | 22 | 56 |
| 13 | 17 | 33 | 32 | 1,200 | 1,200 | 662 | 1,120 | 2,060 | 466 | 87 | 22 | 46 |
| 14 | 16 | 32 | 32 | 970 | 1,120 | 695 | 1,200 | 2,060 | 466 | 80 | 22 | 46 |
| 15 | 16 | 74 | 30 | 760 | 1,200 | 1,200 | 1,200 | 1,870 | 466 | 80 | 20 | 46 |
| 16 | 15 | 215 | 33 | 760 | 1,280 | 970 | 1,200 | 1,520 | 420 | 68 | 20 | 46 |
| 17 | 14 | 94 | 44 | 570 | 6,930 | 970 | 1,200 | 1,440 | 296 | 63 | 20 | 46 |
| 18 | 14 | 74 | 30 | 466 | 4,200 | 1,040 | 1,120 | 1,360 | 296 | 58 | 18 | 38 |
| 19 | 13 | 58 | 32 | 398 | 2,590 | 1,040 | 1,040 | 1,360 | 296 | 54 | 18 | 38 |
| 20 | 13 | 61 | 32 | 376 | 1,870 | 1,120 | 970 | 1,520 | 296 | 50 | 18 | 38 |
| 21 | 13 | 51 | 32 | 376 | 1,600 | 1,120 | 830 | 1,280 | 296 | 46 | 18 | 32 |
| 22 | 13 | 41 | 32 | 376 | 1,200 | 1,200 | 760 | 1,360 | 262 | 46 | 18 | 32 |
| 23 | 13 | 38 | 32 | 376 | 1,040 | 1,280 | 830 | 1,360 | 262 | 46 | 18 | 32 |
| 24 | 13 | 34 | 33 | 1,520 | 900 | 970 | 865 | 1,870 | 262 | 46 | 18 | 32 |
| 25 | 13 | 32 | 35 | 13,400 | 760 | 1,280 | 830 | 3,210 | 262 | 46 | 17 | 32 |
| 26 | 14 | 32 | 37 | 7,950 | 570 | 1,040 | 830 | 2,480 | 246 | 42 | 17 | 27 |
| 27 | 14 | 31 | 51 | 3,760 | 570 | 1,280 | 760 | 2,370 | 230 | 42 | 16 | 27 |
| 28 | 14 | 30 | 56 | 3,620 | 516 | 1,520 | 1,200 | 2,160 | 200 | 42 | 14 | 27 |
| 29 | 16 | 29 | 42 | 1,440 | 516 | 1,690 | 1,200 | 1,960 | 200 | 38 | 14 | 27 |
| 30 | 16 | 27 | 42 | 1,200 | ..... | 1,200 | 4,500 | 1,960 | 186 | 38 | 12 | 27 |
| 31 | 14 | ..... | 51 | 1,040 | ..... | 1,040 | ..... | 1,780 | ..... | 38 | 11 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 27 | 148 | 420 | 2,060 | 1,920 | 590 | 2,000 | 1,090 | 826 | 140 | 51 | 22 |
| 2 | 27 | 138 | 376 | 1,870 | 1,640 | 646 | 1,750 | 1,020 | 826 | 140 | 44 | 22 |
| 3 | 27 | 128 | 376 | 1,520 | 1,470 | 826 | 1,700 | 1,160 | 795 | 140 | 32 | 22 |
| 4 | 27 | 128 | 355 | 1,200 | 1,390 | 858 | 3,500 | 1,310 | 704 | 120 | 32 | 20 |
| 5 | 27 | 1,360 | 334 | 900 | 1,310 | 890 | 6,500 | 1,470 | 646 | 112 | 32 | 20 |
| 6 | 27 | 14,800 | 296 | 760 | 1,310 | 955 | 4,000 | 1,640 | 618 | 104 | 32 | 18 |
| 7 | 27 | 4,350 | 279 | 900 | 1,310 | 1,020 | 3,750 | 1,730 | 536 | 104 | 32 | 18 |
| 8 | 27 | 1,780 | 262 | 1,200 | 1,390 | 1,240 | 3,500 | 2,010 | 510 | 78 | 32 | 18 |
| 9 | 27 | 3,210 | 246 | 970 | 1,470 | 1,390 | 3,250 | 2,210 | 390 | 59 | 32 | 16 |
| 10 | 22 | 3,080 | 262 | 830 | 1,470 | 1,470 | 3,050 | 2,010 | 369 | 44 | 32 | 16 |
| 11 | 22 | 2,480 | 296 | 630 | 1,560 | 1,310 | 3,130 | 1,730 | 348 | 32 | 32 | 16 |
| 12 | 22 | 2,160 | 334 | 1,960 | 1,470 | 1,240 | 2,760 | 1,640 | 329 | 30 | 44 | 14 |
| 13 | 22 | 1,870 | 443 | 4,650 | 1,390 | 1,160 | 2,640 | 1,470 | 310 | 30 | 44 | 14 |
| 14 | 20 | 1,740 | 695 | 4,050 | 1,390 | 1,020 | 2,010 | 1,390 | 276 | 30 | 44 | 14 |
| 15 | 20 | 1,620 | 2,480 | 3,080 | 1,470 | 890 | 1,730 | 1,470 | 276 | 30 | 32 | 14 |
| 16 | 20 | 1,490 | 6,080 | 2,060 | 1,560 | 890 | 1,470 | 1,560 | 260 | 30 | 32 | 14 |
| 17 | 20 | 1,360 | 5,920 | 1,690 | 1,730 | 1,160 | 1,560 | 1,640 | 244 | 30 | 30 | 14 |
| 18 | 20 | 1,280 | 5,920 | 7,440 | 1,470 | 1,090 | 1,640 | 1,470 | 390 | 30 | 30 | 11 |
| 19 | 20 | 1,200 | 2,480 | 4,250 | 1,310 | 1,020 | 1,640 | 1,310 | 214 | 30 | 30 | 11 |
| 20 | 20 | 1,120 | 1,780 | 2,010 | 1,240 | 955 | 1,640 | 1,390 | 186 | 30 | 27 | 11 |
| 21 | 22 | 970 | 1,440 | 1,640 | 1,160 | 955 | 1,640 | 1,390 | 186 | 30 | 27 | 11 |
| 22 | 24 | 900 | 1,200 | 1,470 | 1,090 | 955 | 1,820 | 1,470 | 186 | 30 | 24 | 11 |
| 23 | 110 | 760 | 1,200 | 1,310 | 1,020 | 890 | 1,730 | 1,390 | 151 | 30 | 22 | 11 |
| 24 | 110 | 630 | 830 | 1,160 | 890 | 826 | 2,010 | 1,310 | 151 | 30 | 20 | 10 |
| 25 | 110 | 570 | 760 | 1,240 | 826 | 795 | 2,420 | 1,310 | 162 | 30 | 20 | 10 |
| 26 | 128 | 516 | 728 | 1,240 | 764 | 795 | 2,210 | 1,310 | 162 | 30 | 18 | 10 |
| 27 | 148 | 516 | 695 | 1,310 | 646 | 795 | 1,920 | 1,310 | 186 | 51 | 16 | 10 |
| 28 | 172 | 466 | 695 | 1,470 | 590 | 1,310 | 1,640 | 1,160 | 293 | 78 | 16 | 10 |
| 29 | 420 | 443 | 1,520 | 1,470 | ..... | 2,010 | 1,390 | 890 | 151 | 73 | 16 | 11 |
| 30 | 230 | 420 | 2,830 | 1,560 | ..... | 2,010 | 1,240 | 858 | 104 | 68 | 16 | 11 |
| 31 | 172 | ..... | 2,480 | 1,640 | ..... | 2,110 | ..... | 826 | ..... | 68 | 16 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Aug. 22, 1911, to Jan. 18, 1913, well defined below 3,000 second-feet; Jan. 19 to Sept. 30, 1913, well defined. Discharge estimated Apr. 1–10, 1913, by comparison with records on Eel River at Two Rivers. For other periods for which gage heights are missing, interpolated.

*Monthly discharge of Middle Eel River near Covelo, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August 22-31 | 18 | 11 | 13.0 | 258 | B |
| September | 14 | 10 | 11.9 | 708 | B. |
| 1911–12. | | | | | |
| October | 18 | 11 | 14.4 | 885 | B. |
| November | 215 | 14 | 43.6 | 2,590 | B. |
| December | 56 | 22 | 36.4 | 2,240 | B. |
| January | 13,400 | 46 | 1,420 | 87,300 | C. |
| February | 6,930 | 516 | 1,480 | 85,100 | B. |
| March | 1,690 | 420 | 947 | 58,200 | B. |
| April | 4,500 | 760 | 1,180 | 70,200 | B. |
| May | 6,080 | 1,280 | 2,470 | 152,000 | B. |
| June | 1,520 | 186 | 549 | 32,700 | B. |
| July | 172 | 38 | 81.7 | 5,020 | B. |
| August | 38 | 11 | 23.0 | 1,410 | B. |
| September | 1,960 | 12 | 132 | 7,860 | B. |
| The year | 13,400 | 11 | 696 | 506,000 | |
| 1912–13. | | | | | |
| October | 420 | 20 | 68.3 | 4,200 | B. |
| November | 14,800 | 128 | 1,720 | 102,000 | C. |
| December | 6,080 | 246 | 1,420 | 87,300 | B. |
| January | 7,440 | 630 | 1,920 | 118,000 | C. |
| February | 1,920 | 590 | 1,290 | 71,600 | B. |
| March | 2,110 | 590 | 1,100 | 67,600 | B. |
| April | 6,500 | 1,240 | 2,370 | 141,000 | B. |
| May | 2,210 | 826 | 1,420 | 87,300 | B. |
| June | 826 | 104 | 360 | 21,400 | B. |
| July | 140 | 30 | 60.0 | 3,690 | B. |
| August | 51 | 16 | 29.3 | 1,800 | B. |
| September | 22 | 10 | 14.3 | 851 | B. |
| The year | 14,800 | 10 | 978 | 707,000 | |

## SOUTH FORK OF EEL RIVER AT GARBERVILLE, CAL.

LOCATION.—In the SW. ¼ sec. 24, T. 4 S., R. 3 E., at highway bridge, about a mile southwest of Garberville.

RECORDS AVAILABLE.—August 25, 1911, to September 5, 1913, when station was discontinued.

DRAINAGE AREA.—84 square miles.

GAGE.—Chain gage on downstream side of bridge; length of chain changed to 51.02 feet beginning May 18, 1913.

CHANNEL.—Bowlders and gravel; somewhat shifting during high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curves fairly well defined for low and medium stages. Estimates for high water approximate.

*Discharge measurements of South Fork of Eel River at Garberville, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 13 | 6.50 | 63 | May 18 | 7.90 | 504 | Sept. 5 | 6.47 | 24 |
| Feb. 5 | 9.11 | 1,240 | Sept. 4 | 6.40 | 40 | 5 | 6.47 | 42 |
| Mar. 21 | 9.08 | 1,490 | | | | | | |

*Daily gage height, in feet, of South Fork of Eel River at Garberville, Cal., for the year ending Sept. 30, 1913.*

[Mrs. Amy Coombs, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.58 | 7.36 | 8.3 | 11.0 | 9.6 | 7.98 | 8.9 | 8.2 | 7.45 | 7.05 | 6.67 | 6.42 |
| 2 | 6.58 | 7.10 | 8.3 | 10.4 | 9.4 | 8.3 | 8.9 | 8.0 | 7.44 | 7.03 | 6.67 | 6.45 |
| 3 | 6.58 | 8.15 | 8.2 | 10.2 | 9.3 | 8.35 | 8.9 | 8.0 | 7.39 | 7.02 | 6.62 | 6.42 |
| 4 | 6.58 | 8.25 | 8.15 | 10.0 | 9.1 | 8.2 | 10.8 | 8.0 | 7.27 | 7.04 | 6.61 | 6.40 |
| 5 | 6.52 | 12.1 | 8.1 | 9.7 | 9.1 | 8.1 | 13.0 | 7.99 | 7.34 | 6.99 | 6.66 | 6.47 |
| 6 | 6.50 | 23.6 | 8.05 | 9.6 | 9.0 | 8.0 | 11.8 | 7.89 | 7.30 | 7.04 | 6.61 | ..... |
| 7 | 6.51 | 15.0 | 7.97 | 9.4 | 9.0 | 7.93 | 11.0 | 7.86 | 7.27 | 6.98 | 6.61 | ..... |
| 8 | 6.50 | 12.1 | 7.96 | 11.5 | 8.9 | 7.90 | 10.5 | 7.96 | 7.34 | 6.96 | 6.58 | ..... |
| 9 | 6.54 | 12.5 | 7.90 | 11.0 | 8.8 | 7.89 | 10.0 | 8.05 | 7.29 | 6.95 | 6.56 | ..... |
| 10 | 6.52 | 13.3 | 7.80 | 10.6 | 8.7 | 7.83 | 9.6 | 8.2 | 7.27 | 6.94 | 6.56 | ..... |
| 11 | 6.49 | 11.9 | 7.93 | 10.3 | 8.65 | 7.78 | 9.3 | 8.4 | 7.24 | 6.84 | 6.58 | ..... |
| 12 | 6.49 | 11.7 | 8.5 | 12.7 | 8.6 | 7.76 | 9.4 | 8.35 | 7.24 | 6.85 | 6.58 | ..... |
| 13 | 6.50 | 11.0 | 8.85 | 19.5 | 8.55 | 7.74 | 9.9 | 8.2 | 7.29 | 6.79 | 6.58 | ..... |
| 14 | 6.51 | 12.9 | 11.6 | 18.6 | 8.5 | 7.69 | 9.7 | 8.0 | 7.27 | 6.78 | 6.56 | ..... |
| 15 | 6.50 | 12.0 | 15.7 | 16.6 | 8.45 | 7.67 | 9.6 | 8.0 | 7.25 | 6.74 | 6.56 | ..... |
| 16 | 6.50 | 11.1 | 19.1 | 15.8 | 8.4 | 7.63 | 9.4 | 7.92 | 7.21 | 6.74 | 6.53 | ..... |
| 17 | 6.49 | 10.4 | 14.8 | 15.1 | 8.4 | 7.76 | 9.2 | 7.88 | 7.2 | 6.74 | 6.53 | ..... |
| 18 | 6.46 | 9.9 | 12.9 | 22.8 | 8.3 | 9.4 | 9.1 | 7.91 | 7.15 | 6.77 | 6.53 | ..... |
| 19 | 6.48 | 10.1 | 11.8 | 16.9 | 8.3 | 9.0 | 9.0 | 7.84 | 7.43 | 6.77 | 6.51 | ..... |
| 20 | 6.48 | 10.3 | 11.0 | 14.2 | 8.25 | 8.7 | 8.8 | 7.80 | 7.33 | 6.59 | 6.48 | ..... |
| 21 | 6.48 | 9.8 | 11.6 | 12.8 | 8.3 | 9.2 | 8.7 | 7.75 | 7.26 | 6.75 | 6.46 | ..... |
| 22 | 6.68 | 9.5 | 10.4 | 12.3 | 8.2 | 10.7 | 8.6 | 7.72 | 7.28 | 6.77 | 6.46 | ..... |
| 23 | 7.12 | 9.25 | 10.1 | 11.5 | 8.2 | 10.3 | 8.55 | 7.67 | 7.20 | 6.77 | 6.48 | ..... |
| 24 | 7.00 | 9.1 | 9.8 | 11.0 | 8.3 | 10.0 | 8.4 | 7.65 | 7.19 | 6.77 | 6.46 | ..... |
| 25 | 7.09 | 8.9 | 9.8 | 10.7 | 8.25 | 9.7 | 8.4 | 7.62 | 7.18 | 6.77 | 6.46 | ..... |
| 26 | 7.48 | 8.75 | 9.5 | 10.6 | 8.2 | 9.4 | 8.3 | 7.60 | 7.18 | 6.77 | 6.42 | ..... |
| 27 | 7.70 | 8.6 | 9.35 | 10.4 | 8.15 | 9.3 | 8.25 | 7.64 | 7.19 | 6.72 | 6.42 | ..... |
| 28 | 8.05 | 8.5 | 9.25 | 10.2 | 7.97 | 9.4 | 8.25 | 7.68 | 7.18 | 6.71 | 6.42 | ..... |
| 29 | 8.45 | 8.45 | 9.3 | 10.0 | ..... | 9.5 | 8.45 | 7.60 | 7.13 | 6.69 | 6.42 | ..... |
| 30 | 7.68 | 8.35 | 11.8 | 9.9 | ..... | 9.3 | 8.35 | 7.51 | 7.02 | 6.72 | 6.40 | ..... |
| 31 | 7.46 | ..... | 11.2 | 9.9 | ..... | 9.0 | ..... | 7.49 | ..... | 6.65 | 6.40 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 5, 1912, 22.7 feet at 5 p. m.; Jan. 18, 1913, 24.2 feet.

*Daily discharge, in second-feet, of South Fork of Eel River at Garberville, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | ..... | 48 | 11 | ..... | 48 | 21 | ..... | 44 |
| 2 | ..... | 48 | 12 | ..... | 48 | 22 | ..... | 44 |
| 3 | ..... | 48 | 13 | ..... | 48 | 23 | ..... | 44 |
| 4 | ..... | 48 | 14 | ..... | 48 | 24 | ..... | 44 |
| 5 | ..... | 48 | 15 | ..... | 48 | 25 | 53 | 44 |
| 6 | ..... | 48 | 16 | ..... | 48 | 26 | 53 | 44 |
| 7 | ..... | 48 | 17 | ..... | 48 | 27 | 53 | 48 |
| 8 | ..... | 48 | 18 | ..... | 48 | 28 | 53 | 48 |
| 9 | ..... | 48 | 19 | ..... | 48 | 29 | 53 | 48 |
| 10 | ..... | 48 | 20 | ..... | 44 | 30 | 53 | 48 |
| | | | | | | 31 | 50 | ..... |

*Daily discharge, in second-feet, of South Fork of Eel River at Garberville, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 48 | 48 | 58 | 1,090 | 2,030 | 1,060 | 935 | 16,400 | 685 | 188 | 94 | 74 |
| 2 | 54 | 48 | 56 | 935 | 1,720 | 975 | 858 | 9,160 | 620 | 185 | 98 | 72 |
| 3 | 58 | 48 | 56 | 622 | 1,420 | 895 | 820 | 5,870 | 560 | 177 | 89 | 88 |
| 4 | 58 | 48 | 58 | 475 | 1,240 | 858 | 785 | 4,220 | 532 | 174 | 88 | 100 |
| 5 | 58 | 48 | 65 | 380 | 1,020 | 2,140 | 718 | 3,230 | 505 | 166 | 88 | 158 |
| 6 | 56 | 48 | 133 | 351 | 935 | 5,170 | 652 | 3,360 | 455 | 163 | 84 | 935 |
| 7 | 54 | 48 | 188 | 755 | 1,140 | 6,620 | 685 | 2,250 | 455 | 158 | 81 | 620 |
| 8 | 56 | 48 | 174 | 1,350 | 1,720 | 4,840 | 718 | 1,920 | 437 | 155 | 80 | 290 |
| 9 | 70 | 56 | 118 | 2,210 | 2,140 | 3,780 | 620 | 1,620 | 419 | 150 | 83 | 188 |
| 10 | 68 | 190 | 95 | 2,450 | 2,140 | 3,100 | 620 | 1,420 | 406 | 141 | 78 | 150 |
| 11 | 78 | 260 | 85 | 2,450 | 2,140 | 2,480 | 895 | 1,240 | 389 | 134 | 74 | 124 |
| 12 | 70 | 133 | 79 | 1,700 | 1,820 | 2,720 | 975 | 1,100 | 414 | 132 | 78 | 102 |
| 13 | 64 | 112 | 76 | 2,960 | 2,360 | 2,600 | 895 | 1,020 | 419 | 132 | 79 | 93 |
| 14 | 68 | 118 | 70 | 1,980 | 2,600 | 2,140 | 685 | 935 | 419 | 126 | 79 | 93 |
| 15 | 70 | 168 | 70 | 1,450 | 2,360 | 7,210 | 652 | 858 | 385 | 120 | 79 | 86 |
| 16 | 64 | 359 | 73 | 1,170 | 2,600 | 8,040 | 560 | 785 | 352 | 118 | 76 | 82 |
| 17 | 58 | 253 | 174 | 1,090 | 5,690 | 6,050 | 532 | 718 | 328 | 114 | 76 | 81 |
| 18 | 58 | 149 | 240 | 1,090 | 8,480 | 4,680 | 505 | 685 | 309 | 113 | 75 | 79 |
| 19 | 58 | 116 | 202 | 1,350 | 6,430 | 3,780 | 480 | 685 | 290 | 108 | 76 | 78 |
| 20 | 54 | 94 | 158 | 1,010 | 3,920 | 3,100 | 455 | 975 | 294 | 108 | 73 | 78 |
| 21 | 54 | 84 | 131 | 898 | 2,970 | 2,720 | 437 | 1,100 | 298 | 108 | 74 | 77 |
| 22 | 48 | 78 | 122 | 825 | 2,480 | 2,360 | 414 | 935 | 276 | 102 | 71 | 73 |
| 23 | 48 | 72 | 114 | 755 | 2,140 | 2,140 | 455 | 935 | 290 | 100 | 70 | 73 |
| 24 | 48 | 68 | 116 | 3,360 | 1,920 | 1,920 | 532 | 975 | 283 | 103 | 71 | 68 |
| 25 | 48 | 68 | 110 | 39,400 | 1,720 | 1,720 | 560 | 975 | 283 | 108 | 73 | 72 |
| 26 | 48 | 65 | 99 | 27,900 | 1,520 | 1,620 | 532 | 975 | 283 | 110 | 73 | 69 |
| 27 | 48 | 65 | 253 | 12,400 | 1,320 | 1,420 | 505 | 1,060 | 254 | 103 | 73 | 71 |
| 28 | 48 | 60 | 1,350 | 7,210 | 1,240 | 1,320 | 560 | 975 | 223 | 100 | 73 | 77 |
| 29 | 48 | 58 | 790 | 4,520 | 1,140 | 1,240 | 8,260 | 895 | 214 | 103 | 69 | 75 |
| 30 | 48 | 58 | 530 | 3,500 | ..... | 1,100 | 9,160 | 820 | 207 | 102 | 67 | 70 |
| 31 | 48 | ..... | 622 | 2,600 | ..... | 975 | ..... | 750 | ..... | 94 | 68 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 69 | 207 | 620 | 3,360 | 1,720 | 446 | 1,240 | 690 | 300 | 165 | 75 | 40 |
| 2 | 69 | 136 | 620 | 2,600 | 1,520 | 620 | 1,240 | 565 | 296 | 159 | 75 | 44 |
| 3 | 69 | 532 | 560 | 2,360 | 1,420 | 652 | 1,240 | 565 | 276 | 156 | 67 | 40 |
| 4 | 69 | 590 | 532 | 2,140 | 1,240 | 560 | 3,320 | 565 | 270 | 162 | 66 | 38 |
| 5 | 65 | 5,000 | 505 | 1,820 | 1,240 | 505 | 6,620 | 560 | 259 | 148 | 74 | 46 |
| 6 | 63 | 40,200 | 480 | 1,720 | 1,140 | 455 | 4,670 | 504 | 245 | 162 | 66 | ..... |
| 7 | 64 | 11,100 | 442 | 1,520 | 1,140 | 424 | 3,580 | 488 | 234 | 145 | 66 | ..... |
| 8 | 63 | 5,000 | 437 | 4,070 | 1,060 | 410 | 2,950 | 543 | 259 | 140 | 61 | ..... |
| 9 | 66 | 5,690 | 410 | 3,360 | 975 | 406 | 2,370 | 595 | 242 | 138 | 58 | ..... |
| 10 | 65 | 7,210 | 368 | 2,840 | 895 | 381 | 1,940 | 690 | 234 | 135 | 58 | ..... |
| 11 | 62 | 4,680 | 424 | 2,480 | 858 | 360 | 1,620 | 830 | 224 | 110 | 61 | ..... |
| 12 | 62 | 4,370 | 750 | 6,050 | 820 | 352 | 1,720 | 795 | 224 | 112 | 61 | ..... |
| 13 | 63 | 3,360 | 1,020 | 25,000 | 785 | 344 | 2,260 | 690 | 242 | 98 | 61 | ..... |
| 14 | 64 | 6,430 | 4,220 | 21,900 | 750 | 324 | 2,040 | 565 | 234 | 96 | 58 | ..... |
| 15 | 63 | 4,840 | 13,000 | 15,500 | 718 | 317 | 1,940 | 565 | 228 | 88 | 58 | ..... |
| 16 | 63 | 3,500 | 23,600 | 13,200 | 685 | 301 | 1,720 | 521 | 214 | 88 | 54 | ..... |
| 17 | 62 | 2,600 | 10,600 | 11,400 | 685 | 352 | 1,520 | 499 | 210 | 88 | 54 | ..... |
| 18 | 60 | 2,030 | 6,430 | 37,100 | 620 | 1,520 | 1,430 | 516 | 195 | 94 | 54 | ..... |
| 19 | 62 | 2,250 | 4,520 | 16,400 | 620 | 1,340 | 1,340 | 477 | 292 | 94 | 51 | ..... |
| 20 | 62 | 2,480 | 3,360 | 9,160 | 590 | 1,070 | 1,160 | 455 | 256 | 63 | 48 | ..... |
| 21 | 62 | 1,920 | 4,220 | 6,240 | 620 | 1,520 | 1,070 | 430 | 231 | 90 | 45 | ..... |
| 22 | 77 | 1,620 | 2,600 | 5,340 | 560 | 3,190 | 985 | 415 | 238 | 94 | 45 | ..... |
| 23 | 141 | 1,370 | 2,250 | 4,070 | 560 | 2,710 | 945 | 392 | 210 | 94 | 48 | ..... |
| 24 | 116 | 1,240 | 1,920 | 3,360 | 620 | 2,370 | 830 | 382 | 204 | 94 | 45 | ..... |
| 25 | 134 | 1,060 | 1,920 | 2,970 | 590 | 2,040 | 830 | 369 | 204 | 94 | 45 | ..... |
| 26 | 247 | 935 | 1,620 | 2,840 | 560 | 1,720 | 760 | 360 | 204 | 94 | 40 | ..... |
| 27 | 328 | 820 | 1,470 | 2,600 | 532 | 1,620 | 725 | 378 | 207 | 84 | 40 | ..... |
| 28 | 480 | 750 | 1,370 | 2,360 | 441 | 1,720 | 725 | 396 | 204 | 82 | 40 | ..... |
| 29 | 718 | 718 | 1,420 | 2,140 | ..... | 1,830 | 868 | 360 | 189 | 78 | 40 | ..... |
| 30 | 320 | 652 | 4,520 | 2,030 | ..... | 1,620 | 795 | 324 | 156 | 84 | 38 | ..... |
| 31 | 240 | ..... | 3,640 | 2,030 | ..... | 1,340 | ..... | 316 | ..... | 72 | 38 | ..... |

NOTE.—Daily discharge determined from rating curves fairly well defined below about 2,000 second-feet, applicable as follows: Aug. 25, 1911, to Jan. 25, 1912; Jan. 26, 1912, to Mar. 18, 1913; Mar. 19 to Sept. 5, 1913. High-water estimates are based on extension of rating curves and are only approximate.

*Monthly discharge of South Fork of Eel River at Garberville, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August 25–31 | 53 | 50 | 52.6 | 730 | B. |
| September | 48 | 44 | 47.1 | 2,800 | B. |
| 1911–12. | | | | | |
| October | 78 | 48 | 56.6 | 3,480 | B. |
| November | 359 | 48 | 102 | 6,070 | B. |
| December | 1,350 | 56 | 209 | 12,900 | B. |
| January | 39,400 | 351 | 4,200 | 258,000 | D. |
| February | 8,480 | 935 | 2,430 | 140,000 | C. |
| March | 8,040 | 858 | 2,930 | 180,000 | C. |
| April | 9,160 | 414 | 1,180 | 70,200 | B. |
| May | 16,400 | 685 | 2,220 | 136,000 | B. |
| June | 685 | 207 | 376 | 22,400 | B. |
| July | 188 | 94 | 129 | 7,930 | B. |
| August | 98 | 67 | 77.7 | 4,780 | B. |
| September | 935 | 68 | 143 | 8,510 | B. |
| The year | 39,400 | 48 | 1,170 | 850,000 | |
| 1912–13. | | | | | |
| October | 718 | 60 | 134 | 8,240 | B. |
| November | 40,200 | 136 | 4,110 | 245,000 | B. |
| December | 23,600 | 368 | 3,220 | 198,000 | C. |
| January | 37,100 | 1,520 | 7,100 | 437,000 | D. |
| February | 1,720 | 441 | 856 | 47,500 | C. |
| March | 3,190 | 301 | 1,060 | 65,200 | C. |
| April | 6,620 | 725 | 1,820 | 108,000 | C. |
| May | 830 | 316 | 510 | 31,400 | B. |
| June | 300 | 156 | 233 | 13,900 | B. |
| July | 165 | 63 | 110 | 6,760 | B. |
| August | 75 | 38 | 54.5 | 3,350 | C. |
| September 1–5 | 46 | 38 | 41.6 | 412 | C. |
| The period | | | | 165,000 | |

## VAN DUZEN RIVER AT BRIDGEVILLE, CAL.

LOCATION.—In the SE. ¼ sec. 11, T. 1 N., R. 3 E., just below highway bridge, at Bridgeville.

RECORDS AVAILABLE.—September 22, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—194 square miles.

GAGE.—Staff in three sections on right bank at bridge.

CHANNEL.—Gravel; somewhat shifting during high water.

DISCHARGE MEASUREMENTS.—Made from cable 90 feet below gage or by wading.

ACCURACY.—On account of frequent changes in channel caused by high water several fairly well defined rating curves have been used. Estimates for high water are approximate; other results fair.

*Discharge measurements of Van Duzen River at Bridgeville, Cal. during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 17 | 5.09 | 16 | Feb. 10 | 8.45 | 998 | May 8 | 7.23 | 464 |
| Jan. 9 | 7.59 | 627 | Mar. 12 | 7.45 | 490 | June 24 | 6.10 | 115 |
| 10 | 7.42 | 542 | 13 | 7.28 | 442 | Aug. 28 | 5.12 | 12 |
| Feb. 9 | 8.52 | 1,090 | May 7 | 7.10 | 442 | 28 | 5.12 | 11 |

*Daily gage height, in feet, of Van Duzen River at Bridgeville, Cal., for the year ending Sept. 30, 1913.*

[Mrs. M. L. Ballard, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.12 | 6.00 | 6.6 | 9.1 | 9.0 | 6.85 | 8.8 | 7.3 | 6.25 | 5.90 | 5.5 |
| 2 | 5.10 | 6.15 | 6.6 | 8.4 | 9.2 | 6.9 | 8.8 | 7.1 | 6.10 | 5.90 | 5.5 |
| 3 | 5.10 | 6.12 | 6.5 | 8.0 | 9.1 | 7.6 | 8.5 | 7.1 | 6.32 | 5.90 | 5.5 |
| 4 | 5.10 | 6.08 | 6.9 | 7.9 | 9.0 | 7.55 | 11.5 | 7.0 | 6.5 | 5.90 | 5.46 |
| 5 | 5.10 | 10.0 | 6.5 | 7.5 | 8.6 | 7.5 | 13.0 | 7.0 | 6.45 | 5.90 | 5.45 |
| 6 | 5.10 | 18.5 | 6.5 | 7.5 | 8.4 | 7.5 | 11.8 | 7.0 | 6.40 | 5.90 | 5.42 |
| 7 | 5.08 | 10.5 | 6.5 | 7.5 | 8.4 | 7.5 | 9.8 | 7.05 | 6.32 | 5.90 | 5.41 |
| 8 | 5.08 | 8.8 | 6.5 | 8.2 | 8.4 | 7.5 | 8.9 | 7.3 | 6.30 | 5.88 | 5.4 |
| 9 | 5.05 | 12.0 | 6.5 | 7.55 | 8.5 | 7.5 | 8.5 | 7.6 | 6.28 | 5.82 | 5.4 |
| 10 | 5.05 | 11.5 | 6.5 | 7.4 | 8.5 | 7.5 | 8.5 | 8.1 | 6.25 | 5.78 | 5.4 |
| 11 | 5.02 | 9.2 | 6.5 | 7.4 | 8.5 | 7.5 | 8.4 | 8.4 | 6.22 | 5.75 | ..... |
| 12 | 5.02 | 9.8 | 7.7 | 8.2 | 8.4 | 7.45 | 8.6 | 8.5 | 6.20 | 5.75 | ..... |
| 13 | 5.05 | 8.8 | 7.75 | 19.0 | 8.2 | 7.2 | 9.0 | 8.5 | 6.15 | 5.72 | ..... |
| 14 | 5.06 | 11.8 | 11.0 | 13.6 | 8.1 | 7.1 | 8.6 | 8.4 | 6.15 | 5.70 | ..... |
| 15 | 5.06 | 9.4 | 14.0 | 12.3 | 8.1 | 7.05 | 8.3 | 7.95 | 6.10 | 5.68 | ..... |
| 16 | 5.08 | 8.6 | 16.2 | 10.4 | 8.3 | 7.0 | 8.0 | 7.5 | 6.10 | 5.61 | ..... |
| 17 | 5.09 | 8.4 | 13.6 | 9.6 | 8.5 | 7.0 | 7.9 | 7.3 | 6.05 | 5.64 | ..... |
| 18 | 5.08 | 7.8 | 11.2 | 19.0 | 8.2 | 7.55 | 7.9 | 7.3 | 6.00 | 5.61 | ..... |
| 19 | 5.06 | 8.3 | 10.2 | 13.2 | 7.9 | 7.55 | 7.8 | 7.2 | 6.02 | 5.69 | ..... |
| 20 | 5.06 | 8.6 | 9.4 | 10.2 | 7.85 | 7.45 | 7.55 | 7.1 | 6.05 | 5.58 | ..... |
| 21 | 5.05 | 8.1 | 8.6 | 9.5 | 7.6 | 7.7 | 7.5 | 7.1 | 6.05 | 5.58 | ..... |
| 22 | 5.05 | 7.8 | 8.2 | 9.2 | 7.45 | 7.9 | 7.5 | 7.0 | 6.00 | 5.52 | ..... |
| 23 | 5.05 | 7.55 | 8.0 | 8.8 | 7.45 | 8.0 | 7.5 | 7.0 | 6.00 | 5.50 | ..... |
| 24 | 5.06 | 7.3 | 7.85 | 8.6 | 7.2 | 7.5 | 7.5 | 7.0 | 6.10 | 5.50 | ..... |
| 25 | 5.49 | 7.3 | 7.65 | 8.6 | 7.2 | 7.5 | 7.5 | 7.0 | 6.10 | 5.58 | ..... |
| 26 | 6.45 | 7.1 | 7.45 | 8.6 | 7.0 | 7.5 | 7.5 | 7.0 | 6.02 | 5.58 | ..... |
| 27 | 6.8 | 7.0 | 7.25 | 8.5 | 6.95 | 7.55 | 7.45 | 7.0 | 6.00 | 5.55 | ..... |
| 28 | 6.45 | 6.9 | 7.25 | 8.5 | 6.9 | 9.0 | 7.45 | 6.9 | 6.10 | 5.52 | ..... |
| 29 | 6.8 | 6.8 | 7.4 | 8.5 | ..... | 9.6 | 7.4 | 6.75 | 6.08 | 5.50 | ..... |
| 30 | 6.05 | 6.7 | 9.6 | 8.5 | ..... | 9.4 | 7.4 | 6.6 | 5.95 | 5.50 | ..... |
| 31 | 6.35 | ..... | 9.6 | 8.8 | ..... | 9.1 | ..... | 6.45 | ..... | 5.50 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 20.5 feet at 8.45 a. m.; Jan. 18, 1913, 20.5 feet at 8.10 a. m.

*Daily discharge, in second-feet, of Van Duzen River at Bridgeville, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 22 | 7 | 25 | 7 | 28 | 9 |
| 23 | 7 | 26 | 8 | 29 | 9 |
| 24 | 7 | 27 | 9 | 30 | 9 |

*Daily discharge, in second-feet, of Van Duzen River at Bridgeville, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 9 | 10 | 22 | 152 | 895 | 278 | 590 | 10,400 | 450 | 114 | 24 | 10 |
| 2 | 9 | 11 | 22 | 131 | 840 | 248 | 590 | 5,520 | 426 | 112 | 24 | 13 |
| 3 | 10 | 11 | 21 | 120 | 760 | 248 | 522 | 2,920 | 388 | 104 | 24 | 32 |
| 4 | 11 | 11 | 21 | 118 | 660 | 220 | 418 | 1,940 | 380 | 96 | 24 | 66 |
| 5 | 11 | 10 | 38 | 126 | 636 | 1,660 | 418 | 1,450 | 380 | 93 | 24 | 102 |
| 6 | 10 | 11 | 71 | 162 | 684 | 2,580 | 418 | 1,380 | 380 | 91 | 23 | 344 |
| 7 | 9 | 11 | 118 | 2,140 | 895 | 1,800 | 418 | 1,250 | 327 | 86 | 22 | 310 |
| 8 | 10 | 13 | 72 | 1,050 | 1,520 | 1,940 | 418 | 1,130 | 310 | 81 | 21 | 234 |
| 9 | 17 | 38 | 60 | 2,300 | 1,250 | 1,800 | 410 | 1,010 | 284 | 74 | 20 | 138 |
| 10 | 21 | 95 | 48 | 2,140 | 1,310 | 1,130 | 380 | 868 | 254 | 67 | 20 | 83 |
| 11 | 17 | 89 | 42 | 1,770 | 1,190 | 895 | 426 | 760 | 248 | 61 | 19 | 55 |
| 12 | 16 | 89 | 33 | 1,490 | 1,130 | 1,130 | 418 | 709 | 248 | 54 | 18 | 48 |
| 13 | 14 | 71 | 23 | 2,960 | 1,380 | 1,010 | 479 | 636 | 248 | 49 | 18 | 44 |
| 14 | 17 | 74 | 32 | 1,700 | 1,130 | 895 | 426 | 613 | 248 | 48 | 17 | 40 |
| 15 | 21 | 218 | 49 | 1,050 | 1,070 | 2,260 | 418 | 500 | 248 | 44 | 16 | 37 |
| 16 | 15 | 272 | 76 | 798 | 2,920 | 2,260 | 418 | 479 | 242 | 43 | 16 | 37 |
| 17 | 15 | 162 | 88 | 620 | 6,680 | 1,870 | 380 | 438 | 215 | 41 | 15 | 37 |
| 18 | 14 | 91 | 83 | 770 | 4,640 | 1,520 | 344 | 418 | 189 | 40 | 14 | 36 |
| 19 | 12 | 74 | 91 | 825 | 2,920 | 1,250 | 337 | 458 | 168 | 38 | 14 | 34 |
| 20 | 12 | 56 | 95 | 720 | 1,590 | 1,070 | 337 | 709 | 152 | 33 | 13 | 34 |
| 21 | 11 | 49 | 82 | 526 | 1,250 | 950 | 310 | 786 | 148 | 31 | 13 | 32 |
| 22 | 11 | 41 | 91 | 462 | 895 | 868 | 310 | 786 | 128 | 30 | 12 | 32 |
| 23 | 11 | 32 | 99 | 442 | 868 | 868 | 327 | 1,010 | 144 | 30 | 11 | 32 |
| 24 | 11 | 31 | 105 | 6,090 | 709 | 840 | 458 | 1,250 | 144 | 30 | 11 | 30 |
| 25 | 11 | 29 | 91 | 21,700 | 636 | 840 | 590 | 1,310 | 136 | 29 | 11 | 28 |
| 26 | 12 | 26 | 88 | 11,600 | 544 | 813 | 613 | 1,190 | 130 | 28 | 10 | 26 |
| 27 | 11 | 23 | 244 | 5,740 | 418 | 786 | 479 | 1,130 | 128 | 28 | 10 | 24 |
| 28 | 11 | 23 | 194 | 2,920 | 418 | 760 | 734 | 868 | 124 | 24 | 10 | 26 |
| 29 | 11 | 22 | 152 | 2,180 | 362 | 734 | 9,820 | 760 | 124 | 24 | 10 | 24 |
| 30 | 11 | 22 | 143 | 1,590 | ..... | 660 | 8,050 | 590 | 119 | 24 | 10 | 17 |
| 31 | 11 | ..... | 152 | 1,130 | ..... | 613 | ..... | 522 | ..... | 24 | 10 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 18 | 128 | 230 | 1,540 | 1,380 | 275 | 1,250 | 506 | 149 | 84 | 38 |
| 2 | 16 | 159 | 230 | 1,080 | 1,520 | 290 | 1,250 | 420 | 118 | 84 | 38 |
| 3 | 16 | 152 | 200 | 845 | 1,460 | 564 | 1,060 | 420 | 165 | 84 | 38 |
| 4 | 16 | 144 | 332 | 790 | 1,380 | 541 | 3,420 | 380 | 210 | 84 | 35 |
| 5 | 16 | 2,260 | 200 | 580 | 1,120 | 518 | 5,000 | 380 | 197 | 84 | 34 |
| 6 | 16 | 12,400 | 200 | 580 | 995 | 518 | 3,790 | 380 | 184 | 84 | 32 |
| 7 | 15 | 2,610 | 200 | 580 | 995 | 518 | 2,060 | 400 | 165 | 84 | 31 |
| 8 | 15 | 1,340 | 200 | 960 | 995 | 518 | 1,420 | 506 | 160 | 81 | 30 |
| 9 | 13 | 3,990 | 200 | 605 | 1,060 | 518 | 1,160 | 650 | 156 | 73 | 30 |
| 10 | 13 | 3,500 | 200 | 532 | 1,060 | 518 | 1,160 | 920 | 149 | 68 | 30 |
| 11 | 11 | 1,610 | 200 | 532 | 1,060 | 518 | 1,100 | 1,100 | 142 | 64 | ..... |
| 12 | 11 | 2,050 | 682 | 960 | 995 | 496 | 1,220 | 1,160 | 138 | 64 | ..... |
| 13 | 13 | 1,340 | 709 | 13,200 | 875 | 392 | 1,480 | 1,160 | 128 | 60 | ..... |
| 14 | 14 | 3,790 | 3,050 | 5,690 | 820 | 356 | 1,220 | 1,100 | 128 | 58 | ..... |
| 15 | 14 | 1,750 | 6,170 | 4,290 | 820 | 339 | 1,040 | 838 | 118 | 56 | ..... |
| 16 | 15 | 1,200 | 8,980 | 2,530 | 935 | 322 | 865 | 600 | 118 | 49 | ..... |
| 17 | 15 | 1,080 | 5,690 | 1,900 | 1,060 | 322 | 810 | 506 | 109 | 52 | ..... |
| 18 | 15 | 736 | 3,230 | 13,200 | 875 | 541 | 810 | 506 | 100 | 49 | ..... |
| 19 | 14 | 1,020 | 2,370 | 5,220 | 714 | 541 | 755 | 462 | 104 | 48 | ..... |
| 20 | 14 | 1,200 | 1,750 | 2,290 | 688 | 496 | 625 | 420 | 109 | 46 | ..... |
| 21 | 13 | 900 | 1,200 | 1,740 | 564 | 612 | 600 | 420 | 109 | 46 | ..... |
| 22 | 13 | 736 | 960 | 1,520 | 496 | 714 | 600 | 380 | 100 | 40 | ..... |
| 23 | 13 | 605 | 845 | 1,250 | 496 | 766 | 600 | 380 | 100 | 38 | ..... |
| 24 | 14 | 488 | 763 | 1,120 | 392 | 518 | 600 | 380 | 118 | 38 | ..... |
| 25 | 53 | 488 | 656 | 1,120 | 392 | 518 | 600 | 380 | 118 | 46 | ..... |
| 26 | 234 | 406 | 556 | 1,120 | 322 | 518 | 600 | 380 | 104 | 46 | ..... |
| 27 | 344 | 368 | 467 | 1,060 | 306 | 541 | 576 | 380 | 100 | 43 | ..... |
| 28 | 234 | 332 | 467 | 1,060 | 290 | 1,380 | 576 | 342 | 118 | 40 | ..... |
| 29 | 344 | 296 | 532 | 1,060 | ..... | 1,820 | 552 | 289 | 114 | 38 | ..... |
| 30 | 138 | 262 | 1,900 | 1,060 | ..... | 1,670 | 552 | 240 | 92 | 38 | ..... |
| 31 | 207 | ..... | 1,900 | 1,250 | ..... | 1,460 | ..... | 197 | ..... | 38 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 22, 1911, to Jan. 25, 1912, fairly well defined below 400 second-feet; Jan. 26 to Nov. 6, 1912, fairly well defined below 8,000 second-feet; Nov. 7, 1912, to Jan. 18, 1913, poorly defined; Jan. 19, to Apr. 5, 1913, fairly well defined below 1,600 second-feet; Apr. 6 to Aug. 10, 1913, fairly well defined below 600 second-feet. High water estimates are based on extension of the rating curves and are only approximate.

*Monthly discharge of Van Duzen River at Bridgeville, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911–12. | | | | | |
| October | 21 | 9 | 12.6 | 775 | C |
| November | 272 | 10 | 57.2 | 3,400 | C |
| December | 244 | 21 | 82.1 | 5,050 | C |
| January | 21,700 | 118 | 2,440 | 150,000 | D |
| February | 6,680 | 362 | 1,390 | 80,000 | C |
| March | 2,580 | 220 | 1,120 | 68,900 | B |
| April | 9,820 | 310 | 1,010 | 60,100 | C |
| May | 10,400 | 418 | 1,410 | 86,700 | C |
| June | 450 | 119 | 237 | 14,100 | B |
| July | 114 | 24 | 53.9 | 3,310 | B |
| August | 24 | 10 | 16.3 | 1,000 | C |
| September | 344 | 10 | 66.8 | 3,970 | B |
| The year | 21,700 | 9 | 657 | 477,000 | |
| 1912–13. | | | | | |
| October | 344 | 11 | 61.2 | 3,760 | C |
| November | 12,400 | 128 | 1,580 | 94,000 | C |
| December | 8,980 | 200 | 1,460 | 89,800 | C |
| January | 13,200 | 532 | 2,300 | 141,000 | C |
| February | 1,520 | 290 | 859 | 47,700 | B |
| March | 1,820 | 275 | 633 | 38,900 | B |
| April | 5,000 | 552 | 1,250 | 74,400 | C |
| May | 1,160 | 197 | 535 | 32,900 | B |
| June | 210 | 92 | 131 | 7,800 | B |
| July | 84 | 38 | 58.3 | 3,580 | B |
| August 1–10 | 38 | 30 | 33.6 | 666 | B |
| The period | | | | 535,000 | |

## YAGER CREEK AT CARLOTTA, CAL.

LOCATION.—In sec. 28, T. 2 N., R. 1 E., at highway bridge at Carlotta, about half a mile above junction with Van Duzen River.

RECORDS AVAILABLE.—August 29, 1911, to September 30, 1913.

DRAINAGE AREA.—146 square miles.

GAGE.—Vertical staff fastened to left abutment of bridge. January 7, 1912, a chain gage was installed on bridge, at same datum as staff gage. Length of chain 36.28 feet.

CHANNEL.—Gravel and sand; shifts at high stages.

DISCHARGE MEASUREMENTS.—Made from railroad bridge 40 feet below gage or by wading.

ACCURACY.—Rating curve fairly well defined; results fair. High-water estimates are approximate.

*Discharge measurements of Yager Creek at Carlotta, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 17 | 5.90 | 1.7 | Mar. 14 | 6.60 | 70 | June 24 | 6.22 | 29 |
| Jan. 11 | 7.63 | 463 | May 8 | 6.50 | 81 | Aug. 28 | 6.00 | 15 |
| Feb. 9 | 7.45 | 312 | | | | | | |

*Daily gage height, in feet, of Yager Creek at Carlotta, Cal., for the year ending Sept. 30, 1913.*

[A. Sappingfield, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.00 | 6.70 | 6.90 | 8.7 | 7.7 | 6.60 | 7.85 | 6.70 | 6.3 | 6.20 | 6.15 | 6.15 |
| 2 | 6.00 | 6.80 | 6.88 | 8.3 | 7.6 | 6.68 | 7.7 | 6.68 | 6.25 | 6.20 | 6.15 | ..... |
| 3 | 6.00 | 6.80 | 6.90 | 8.0 | 7.5 | 6.80 | 7.8 | 6.62 | 6.22 | 6.20 | 6.15 | 6.15 |
| 4 | 6.00 | 6.95 | 7.15 | 7.65 | 7.45 | 6.80 | 9.2 | 6.58 | 6.20 | 6.20 | 6.15 | ..... |
| 5 | 6.00 | 9.5 | 6.95 | 7.5 | 7.45 | 6.80 | 9.8 | 6.55 | 6.20 | 6.20 | 6.15 | 6.15 |
| 6 | 6.00 | 12.2 | 6.90 | 7.40 | 7.40 | 6.72 | 8.7 | 6.52 | 6.20 | 6.20 | 6.15 | ..... |
| 7 | 6.00 | 8.7 | 6.90 | 7.30 | 7.40 | 6.62 | 8.2 | 6.48 | 6.20 | 6.20 | 6.15 | 6.15 |
| 8 | 6.00 | 7.95 | 6.82 | 8.6 | 7.40 | 6.52 | 7.75 | 6.48 | 6.22 | 6.20 | 6.15 | ..... |
| 9 | 6.00 | 10.4 | 6.78 | 8.15 | 7.38 | 6.50 | 7.55 | 6.58 | 6.25 | 6.20 | ..... | 6.15 |
| 10 | 6.00 | 10.2 | 6.75 | 7.75 | 7.30 | 6.50 | 7.35 | 6.80 | 6.25 | 6.20 | ..... | ..... |
| 11 | 6.00 | 8.8 | 6.75 | 7.6 | 7.22 | 6.45 | 7.18 | 7.30 | 6.25 | 6.20 | 6.15 | 6.15 |
| 12 | 6.00 | 8.5 | 7.10 | 8.6 | 7.20 | 6.40 | 7.45 | 7.45 | 6.25 | 6.20 | ..... | ..... |
| 13 | 5.98 | 7.95 | 7.65 | 13.1 | 7.12 | 6.40 | 8.0 | 7.35 | 6.20 | 6.20 | 6.15 | 6.15 |
| 14 | 5.95 | 9.2 | 10.4 | 10.8 | 7.05 | 6.50 | 7.6 | 7.15 | 6.20 | 6.20 | ..... | 6.10 |
| 15 | 5.95 | 8.4 | 14.6 | 10.7 | 7.00 | 6.52 | 7.5 | 7.08 | 6.20 | 6.20 | 6.15 | 6.10 |
| 16 | 5.95 | 7.95 | 13.2 | 9.8 | 7.00 | 6.50 | 7.42 | 6.98 | 6.20 | 6.20 | ..... | 6.10 |
| 17 | 5.92 | 7.7 | 11.2 | 9.4 | 7.00 | 6.60 | 7.30 | 6.92 | 6.20 | 6.20 | 6.15 | 6.10 |
| 18 | 5.90 | 7.45 | 10.0 | 13.4 | 7.00 | 7.25 | 7.22 | 6.82 | 6.20 | 6.20 | ..... | 6.10 |
| 19 | 5.90 | 7.5 | 9.4 | 10.8 | 7.00 | 7.05 | 7.10 | 6.78 | 6.22 | 6.20 | 61.5 | 6.10 |
| 20 | 5.90 | 8.45 | 8.6 | 9.2 | 6.98 | 7.15 | 7.05 | 6.68 | 6.28 | 6.20 | ..... | 6.10 |
| 21 | 5.90 | 7.95 | 8.2 | 8.6 | 6.92 | 7.35 | 6.92 | 6.60 | 6.22 | 6.20 | 6.15 | 6.10 |
| 22 | 5.95 | 7.6 | 7.85 | 8.4 | 6.82 | 7.7 | 6.90 | 6.55 | 6.20 | 6.20 | ..... | 6.10 |
| 23 | 6.00 | 7.5 | 7.65 | 8.3 | 6.75 | 8.0 | 6.80 | 6.55 | 6.20 | 6.20 | 6.15 | 6.10 |
| 24 | 6.12 | 7.38 | 7.5 | 8.2 | 6.80 | 7.85 | 6.80 | 6.50 | 6.25 | 6.20 | ..... | 6.10 |
| 25 | 6.30 | 7.18 | 7.48 | 8.1 | 6.78 | 7.6 | 6.72 | 6.48 | 6.25 | 6.20 | 6.15 | 6.10 |
| 26 | 6.70 | 7.05 | 7.38 | 8.0 | 6.72 | 7.55 | 6.62 | 6.42 | 6.25 | 6.20 | ..... | 6.10 |
| 27 | 6.85 | 6.98 | 7.30 | 7.9 | 6.68 | 7.7 | 6.60 | 6.40 | 6.25 | 6.20 | 6.15 | 6.10 |
| 28 | 6.80 | 6.90 | 7.22 | 7.8 | 6.62 | 8.6 | 6.62 | 6.40 | 6.22 | 6.20 | 6.0 | 6.10 |
| 29 | 6.82 | 6.90 | 7.48 | 7.75 | ..... | 8.8 | 6.75 | 6.38 | 6.20 | 6.20 | 6.15 | 6.10 |
| 30 | 6.78 | 6.90 | 9.4 | 7.7 | ..... | 8.4 | 6.78 | 6.35 | 6.20 | 6.20 | ..... | 6.10 |
| 31 | 6.78 | ..... | 9.1 | 7.7 | ..... | 7.9 | ..... | 6.30 | ..... | 6.20 | 6.0 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 13.6 feet at 8 a. m.; Dec. 15, 1912, 15.5 feet at 5 p. m.; Jan. 18, 1913, 13.8 feet at 9 a. m.

*Daily discharge, in second-feet, of Yager Creek at Carlotta, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 57 | 90 | 1,050 | 412 | 70 | 485 | 128 | 44 | 28 | 14 | 1.5 |
| 2 | 3 | 72 | 88 | 810 | 368 | 86 | 412 | 123 | 36 | 28 | 13 | 1.5 |
| 3 | 3 | 72 | 90 | 645 | 326 | 112 | 460 | 109 | 31 | 27 | 13 | 1.5 |
| 4 | 3 | 100 | 150 | 472 | 307 | 112 | 1,310 | 100 | 28 | 27 | 12 | 1.5 |
| 5 | 3 | 1,430 | 100 | 405 | 307 | 112 | 1,750 | 93 | 28 | 26 | 12 | 1.5 |
| 6 | 3 | 3,700 | 90 | 360 | 288 | 94 | 1,050 | 86 | 28 | 26 | 12 | 1.5 |
| 7 | 3 | 870 | 90 | 320 | 288 | 74 | 755 | 78 | 28 | 25 | 11 | 1.5 |
| 8 | 3 | 452 | 76 | 990 | 288 | 56 | 520 | 78 | 31 | 25 | 11 | 1.5 |
| 9 | 3 | 2,140 | 69 | 728 | 281 | 52 | 428 | 100 | 36 | 24 | 10 | 1.5 |
| 10 | 3 | 1,980 | 64 | 520 | 252 | 52 | 340 | 154 | 36 | 24 | 10 | 1.5 |
| 11 | 3 | 935 | 64 | 450 | 226 | 44 | 273 | 320 | 36 | 23 | 9 | 1.5 |
| 12 | 3 | 745 | 135 | 990 | 220 | 36 | 382 | 382 | 36 | 23 | 9 | 1.5 |
| 13 | 3 | 452 | 325 | 4,760 | 196 | 36 | 645 | 340 | 28 | 23 | 8 | 1.5 |
| 14 | 2 | 1,210 | 2,140 | 2,640 | 176 | 52 | 450 | 262 | 28 | 22 | 8 | 1.5 |
| 15 | 2 | 685 | 6,110 | 2,550 | 162 | 56 | 405 | 238 | 28 | 22 | 7 | 1.5 |
| 16 | 2 | 452 | 4,860 | 1,830 | 162 | 52 | 369 | 206 | 28 | 21 | 7 | 1 |
| 17 | 2 | 345 | 3,000 | 1,530 | 162 | 70 | 320 | 188 | 28 | 21 | 7 | 1 |
| 18 | 2 | 248 | 1,990 | 5,060 | 162 | 736 | 288 | 160 | 28 | 20 | 6 | 1 |
| 19 | 2 | 265 | 1,530 | 2,570 | 162 | 176 | 245 | 149 | 31 | 20 | 6 | 1 |
| 20 | 2 | 715 | 990 | 1,310 | 157 | 205 | 228 | 123 | 41 | 19 | 5 | 1 |
| 21 | 2 | 452 | 755 | 905 | 141 | 270 | 188 | 104 | 31 | 19 | 5 | 1 |
| 22 | 2 | 305 | 570 | 785 | 117 | 412 | 182 | 93 | 28 | 18 | 4 | 1 |
| 23 | 3 | 265 | 472 | 725 | 101 | 560 | 154 | 93 | 28 | 18 | 4 | 1 |
| 24 | 7 | 223 | 405 | 670 | 112 | 485 | 154 | 82 | 36 | 17 | 3 | 1 |
| 25 | 15 | 159 | 396 | 615 | 108 | 368 | 133 | 78 | 36 | 17 | 3 | 1 |
| 26 | 57 | 122 | 352 | 560 | 94 | 347 | 109 | 66 | 36 | 17 | 2 | 1 |
| 27 | 81 | 106 | 320 | 510 | 86 | 412 | 104 | 62 | 36 | 16 | 2 | 1 |
| 28 | 72 | 90 | 288 | 460 | 74 | 905 | 109 | 62 | 31 | 16 | 1.5 | 1 |
| 29 | 76 | 90 | 396 | 436 | ..... | 1,040 | 141 | 58 | 28 | 15 | 1.5 | 1 |
| 30 | 69 | 90 | 1,530 | 412 | ..... | 785 | 149 | 53 | 28 | 15 | 1.5 | 1 |
| 31 | 69 | ..... | 1,320 | 412 | ..... | 510 | ..... | 44 | ..... | 14 | 1.5 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1 to Dec. 15, 1912, well defined below 250 second-feet (same as used May 6 to Sept. 30, 1912); Dec. 16, 1912, to Jan. 18, 1913, poorly defined; Jan. 19 to Apr. 4, 1913, fairly well defined below 500 second-feet; Apr. 5 to June 30, 1913, fairly well defined below 250 second-feet. Discharge estimated July 1 to Sept. 30, 1913, by interpolation between discharge measurements. High-water estimates are based on extension and parallelism of rating curves, and are only approximate. Discharge Nov. 6 to Dec. 15, 1912, somewhat uncertain owing to lack of measurements between rises.

*Monthly discharge of Yager Creek at Carlotta, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 146 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 81 | 2 | 16.3 | 0.112 | 0.13 | 1,000 | C. |
| November | 3,700 | 57 | 628 | 4.30 | 4.80 | 37,400 | C. |
| December | 6,110 | 64 | 931 | 6.38 | 7.36 | 57,200 | C. |
| January | 5,060 | 320 | 1,180 | 8.08 | 9.32 | 72,600 | C. |
| February | 412 | 74 | 205 | 1.40 | 1.46 | 11,400 | B. |
| March | 1,040 | 36 | 270 | 1.85 | 2.13 | 16,600 | B. |
| April | 1,750 | 104 | 418 | 2.86 | 3.19 | 24,900 | B. |
| May | 382 | 44 | 136 | .932 | 1.07 | 8,360 | B. |
| June | 44 | 28 | 31.9 | .218 | .24 | 1,900 | B. |
| July | 28 | 14 | 21.2 | .145 | .17 | 1,300 | C. |
| August | 14 | 1.5 | 7.06 | .048 | .06 | 434 | C. |
| September | 1.5 | 1 | 1.25 | .086 | .10 | 74 | D. |
| The year | 6,110 | 1 | 322 | 2.21 | 30.03 | 233,000 | |

## MAD RIVER BASIN.

### MAD RIVER NEAR ARCATA, CAL.

LOCATION.—In sec. 15, T. 6 N., R. 1 E., at the Oregon & Eureka Railroad bridge at Essex, 1 mile below Warren Creek, and about 5 miles northeast of Arcata.

RECORDS AVAILABLE.—December 29, 1910, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—452 square miles.

GAGE.—Vertical staff in two sections on right bank at railroad bridge.

CHANNEL.—Sand and gravel; shifting.

DISCHARGE MEASUREMENTS.—Made from highway bridge just above gage or by wading.

ACCURACY.—Results only fair on account of frequent changes in channel. High-water estimates are approximate.

*Discharge measurements of Mad River near Arcata, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 19 | 12.08 | 47 | Feb. 26 | 13.55 | 877 | June 9 | 12.50 | 259 |
| Nov. 4 | 12.88 | 341 | Mar. 24 | 14.56 | 1,900 | Sept. 25 | 11.74 | 31 |
| Jan. 17 | 17.02 | 5,070 | May 10 | 13.58 | 1,020 | Do | 11.74 | 29 |

*Daily gage height, in feet, of Mad River near Arcata, Cal., for the year ending Sept. 30, 1913.*

[Ernest McCloskey, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.15 | 12.70 | 13.2 | 16.7 | 15.4 | 13.4 | 15.9 | 13.6 | 12.75 | 12.38 | 11.92 | 11.80 |
| 2 | 12.12 | 12.70 | 13.15 | 15.7 | 15.5 | 13.4 | 15.6 | 13.5 | 12.70 | 12.35 | 11.92 | 11.80 |
| 3 | 12.12 | 12.78 | 13.25 | 15.2 | 15.2 | 14.0 | 15.5 | 13.4 | 12.68 | 12.35 | 11.92 | 11.78 |
| 4 | 12.10 | 12.90 | 13.5 | 14.9 | 15.1 | 13.95 | 15.3 | 13.4 | 12.65 | 12.32 | 11.90 | 11.78 |
| 5 | 12.10 | 13.8 | 13.3 | 14.45 | 14.8 | 13.95 | 18.5 | 13.4 | 12.62 | 12.30 | 11.90 | 11.78 |
| 6 | 12.10 | 22.3 | 13.2 | 14.4 | 14.7 | 13.95 | 17.0 | 13.35 | 12.60 | 12.30 | 11.90 | 11.78 |
| 7 | 12.10 | 18.7 | 13.1 | 14.2 | 14.8 | 13.95 | 16.4 | 13.35 | 12.55 | 12.38 | 11.90 | 11.78 |
| 8 | 12.10 | 16.5 | 13.0 | 15.3 | 15.0 | 13.95 | 15.9 | 13.3 | 12.52 | 12.35 | 11.90 | 11.78 |
| 9 | 12.08 | 16.9 | 13.0 | 14.9 | 15.0 | 13.95 | 15.5 | 13.5 | 12.50 | 12.30 | 11.88 | 11.78 |
| 10 | 12.08 | 17.8 | 13.0 | 14.6 | 15.0 | 14.0 | 15.1 | 14.0 | 12.45 | 12.25 | 11.88 | 11.78 |
| 11 | 12.08 | 16.6 | 13.0 | 14.2 | 14.8 | 13.85 | 14.7 | 14.1 | 12.40 | 12.18 | 11.88 | 11.78 |
| 12 | 12.08 | 16.0 | 13.8 | 15.2 | 14.8 | 13.7 | 15.5 | 14.15 | 12.38 | 12.12 | 11.88 | 11.75 |
| 13 | 12.08 | 15.3 | 14.9 | 21.8 | 14.5 | 13.5 | 15.8 | 14.3 | 12.38 | 12.08 | 11.85 | 11.75 |
| 14 | 12.05 | 17.0 | 16.6 | 19.4 | 14.4 | 13.5 | 15.4 | 14.05 | 12.35 | 12.08 | 11.85 | 11.75 |
| 15 | 12.05 | 16.1 | 19.7 | 18.6 | 14.4 | 13.35 | 15.1 | 13.8 | 12.30 | 12.05 | 11.85 | 11.75 |
| 16 | 12.02 | 15.5 | 23.3 | 17.9 | 14.4 | 13.3 | 14.9 | 13.7 | 12.30 | 12.02 | 11.82 | 11.75 |
| 17 | 12.00 | 15.0 | 21.2 | 17.2 | 14.6 | 13.3 | 14.6 | 13.6 | 12.30 | 12.02 | 11.82 | 11.75 |
| 18 | 12.00 | 14.5 | 18.7 | 22.2 | 14.35 | 13.7 | 14.4 | 13.55 | 12.30 | 12.00 | 11.82 | 11.75 |
| 19 | 12.05 | 15.8 | 17.4 | 19.0 | 14.3 | 14.1 | 14.3 | 13.5 | 12.45 | 12.00 | 11.82 | 11.75 |
| 20 | 12.08 | 15.8 | 16.4 | 17.7 | 14.15 | 14.2 | 14.1 | 13.4 | 12.40 | 12.00 | 11.82 | 11.75 |
| 21 | 12.08 | 15.2 | 16.3 | 16.3 | 13.9 | 14.3 | 14.0 | 13.3 | 12.30 | 12.00 | 11.82 | 11.75 |
| 22 | 12.08 | 14.5 | 15.2 | 15.8 | 13.8 | 14.5 | 14.0 | 13.25 | 12.30 | 12.00 | 11.82 | 11.75 |
| 23 | 12.15 | 14.15 | 14.9 | 15.6 | 13.7 | 14.9 | 13.9 | 13.2 | 12.30 | 11.98 | 11.80 | 11.75 |
| 24 | 12.25 | 14.0 | 14.6 | 15.2 | 13.6 | 14.7 | 13.85 | 13.15 | 12.30 | 11.98 | 11.80 | 11.75 |
| 25 | 12.30 | 13.85 | 14.5 | 15.2 | 13.5 | 14.25 | 13.8 | 13.1 | 12.38 | 11.98 | 11.80 | 11.75 |
| 26 | 12.40 | 13.55 | 14.4 | 15.2 | 13.45 | 14.1 | 13.7 | 13.0 | 12.40 | 11.98 | 11.80 | 11.75 |
| 27 | 12.70 | 13.4 | 14.1 | 15.2 | 13.4 | 14.1 | 13.6 | 13.0 | 12.45 | 11.98 | 11.80 | 11.75 |
| 28 | 12.70 | 13.3 | 14.05 | 15.2 | 13.4 | 16.2 | 13.6 | 13.0 | 12.50 | 11.98 | 11.80 | 11.75 |
| 29 | 12.70 | 13.2 | 15.1 | 15.3 | ..... | 17.1 | 13.65 | 12.95 | 12.42 | 11.95 | 11.80 | 11.75 |
| 30 | 12.70 | 13.2 | 18.5 | 15.2 | ..... | 16.6 | 13.6 | 12.90 | 12.38 | 11.95 | 11.80 | 11.75 |
| 31 | 12.65 | ..... | 16.5 | 15.4 | ..... | 16.2 | ..... | 12.82 | ..... | 11.95 | 11.80 | ..... |

*Daily discharge, in second-feet, of Mad River near Arcata, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | ..... | 335 | 6,360 | 975 | 1,630 | 595 | 535 | 142 | 50 | 32 |
| 2 | ..... | 295 | 6,180 | 1,020 | 1,630 | 665 | 535 | 130 | 50 | 32 |
| 3 | ..... | 255 | 6,540 | 935 | 1,160 | 700 | 475 | 130 | 40 | 32 |
| 4 | ..... | 255 | 4,980 | 1,240 | 1,160 | 630 | 450 | 130 | 40 | 32 |
| 5 | ..... | 235 | 3,460 | 1,440 | 8,400 | 1,200 | 400 | 130 | 40 | 25 |
| 6 | ..... | 215 | 4,200 | 2,280 | 4,980 | 895 | 375 | 118 | 40 | 25 |
| 7 | ..... | 200 | 3,600 | 5,820 | 3,320 | 975 | 375 | 105 | 40 | 25 |
| 8 | ..... | 200 | 2,650 | 5,300 | 2,650 | 1,060 | 355 | 105 | 40 | 25 |
| 9 | ..... | 475 | 2,280 | 3,600 | 2,780 | 1,440 | 355 | 105 | 40 | 25 |
| 10 | ..... | 1,630 | 2,170 | 3,320 | 3,600 | 1,160 | 335 | 105 | 40 | 25 |
| 11 | ..... | 5,140 | 4,200 | 2,650 | 4,500 | 1,020 | 295 | 92 | 40 | 25 |
| 12 | ..... | 2,520 | 3,900 | 2,400 | 3,600 | 855 | 255 | 92 | 40 | 25 |
| 13 | ..... | 2,280 | 3,750 | 2,280 | 2,910 | 735 | 255 | 80 | 40 | 25 |
| 14 | ..... | 1,840 | 3,040 | 2,060 | 2,520 | 665 | 255 | 80 | 40 | 25 |
| 15 | ..... | 1,630 | 2,780 | 2,060 | 2,170 | 630 | 235 | 70 | 40 | 25 |
| 16 | ..... | 1,530 | 2,170 | 2,060 | 2,060 | 815 | 215 | 70 | 40 | 25 |
| 17 | ..... | 1,480 | 2,060 | 2,060 | 1,950 | 1,630 | 215 | 70 | 32 | 25 |
| 18 | ..... | 1,630 | 3,040 | 2,170 | 1,730 | 6,720 | 215 | 70 | 32 | 25 |
| 19 | ..... | 14,800 | 2,650 | 2,170 | 1,530 | 3,900 | 200 | 60 | 32 | 25 |
| 20 | ..... | 12,200 | 2,400 | 2,170 | 1,340 | 2,780 | 200 | 60 | 32 | 25 |
| 21 | ..... | 6,540 | 2,060 | 2,280 | 1,200 | 2,170 | 185 | 60 | 32 | 25 |
| 22 | ..... | 4,050 | 1,840 | 2,060 | 1,160 | 1,730 | 185 | 60 | 32 | 25 |
| 23 | ..... | 3,040 | 1,630 | 2,280 | 1,060 | 1,630 | 185 | 60 | 32 | 25 |
| 24 | ..... | 2,910 | 1,530 | 2,280 | 975 | 1,240 | 170 | 60 | 32 | 25 |
| 25 | ..... | 3,320 | 1,480 | 1,950 | 935 | 1,020 | 170 | 60 | 32 | 25 |
| 26 | ..... | 4,500 | 1,240 | 1,730 | 895 | 895 | 155 | 60 | 32 | 25 |
| 27 | ..... | 4,500 | 1,240 | 1,530 | 855 | 775 | 155 | 60 | 32 | 25 |
| 28 | 255 | 4,200 | 1,110 | 1,290 | 735 | 665 | 155 | 50 | 32 | 25 |
| 29 | 255 | 3,750 | ..... | 1,290 | 665 | 630 | 155 | 50 | 32 | 25 |
| 30 | 255 | 10,100 | ..... | 1,730 | 630 | 595 | 142 | 50 | 32 | 25 |
| 31 | 375 | 9,030 | ..... | 1,630 | ..... | 535 | ..... | 50 | 32 | ..... |

| Date. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 25 | 25 | 60 | 1,390 | 2,100 | 1,020 | 1,240 | 15,100 | 1,040 | 190 | 81 | 45 |
| 2 | 25 | 25 | 76 | 735 | 1,650 | 970 | 1,060 | 7,000 | 770 | 190 | 75 | 45 |
| 3 | 25 | 25 | 76 | 475 | 1,540 | 928 | 1,020 | 5,860 | 770 | 184 | 75 | 160 |
| 4 | 25 | 25 | 76 | 450 | 1,340 | 885 | 970 | 4,330 | 670 | 175 | 69 | 160 |
| 5 | 25 | 25 | 70 | 335 | 1,240 | 1,440 | 885 | 3,280 | 520 | 175 | 69 | 220 |
| 6 | 25 | 25 | 70 | 335 | 1,150 | 3,860 | 885 | 3,000 | 520 | 166 | 65 | 640 |
| 7 | 28 | 25 | 130 | 6,540 | 1,240 | 4,310 | 805 | 2,360 | 495 | 160 | 65 | 520 |
| 8 | 32 | 28 | 118 | 4,660 | 3,140 | 3,140 | 805 | 2,000 | 470 | 160 | 65 | 272 |
| 9 | 32 | 32 | 105 | 5,140 | 3,140 | 2,860 | 768 | 1,890 | 445 | 148 | 61 | 220 |
| 10 | 32 | 155 | 100 | 4,200 | 2,860 | 2,340 | 768 | 1,470 | 420 | 148 | 61 | 148 |
| 11 | 32 | 155 | 92 | 3,320 | 2,730 | 2,100 | 1,150 | 1,370 | 375 | 140 | 55 | 135 |
| 12 | 32 | 118 | 80 | 2,520 | 2,470 | 1,870 | 1,240 | 1,180 | 420 | 130 | 55 | 115 |
| 13 | 32 | 100 | 76 | 7,260 | 2,120 | 1,870 | 1,240 | 1,000 | 420 | 130 | 55 | 110 |
| 14 | 37 | 80 | 76 | 4,200 | 2,100 | 1,760 | 1,060 | 920 | 470 | 122 | 55 | 85 |
| 15 | 32 | 425 | 70 | 2,910 | 2,340 | 2,100 | 1,020 | 840 | 420 | 122 | 55 | 85 |
| 16 | 32 | 700 | 80 | 2,400 | 6,780 | 3,860 | 970 | 840 | 375 | 115 | 55 | 85 |
| 17 | 32 | 375 | 271 | 2,060 | 18,000 | 3,710 | 928 | 700 | 330 | 110 | 49 | 75 |
| 18 | 32 | 255 | 275 | 1,730 | 11,800 | 3,140 | 885 | 700 | 330 | 110 | 49 | 69 |
| 19 | 32 | 142 | 215 | 1,630 | 6,970 | 2,860 | 885 | 670 | 290 | 105 | 49 | 65 |
| 20 | 32 | 130 | 209 | 1,340 | 4,010 | 2,600 | 845 | 920 | 310 | 105 | 49 | 61 |
| 21 | 32 | 105 | 200 | 1,110 | 2,860 | 2,120 | 805 | 1,090 | 310 | 105 | 49 | 61 |
| 22 | 32 | 105 | 179 | 935 | 2,600 | 1,870 | 730 | 1,180 | 290 | 98 | 45 | 55 |
| 23 | 28 | 100 | 185 | 815 | 1,780 | 1,760 | 695 | 1,270 | 290 | 98 | 45 | 55 |
| 24 | 28 | 80 | 191 | 1,240 | 1,980 | 1,650 | 805 | 1,780 | 283 | 90 | 45 | 55 |
| 25 | 28 | 76 | 209 | 19,000 | 1,650 | 1,650 | 1,150 | 1,780 | 283 | 90 | 45 | 55 |
| 26 | 28 | 64 | 215 | 17,100 | 1,440 | 1,540 | 1,540 | 1,780 | 255 | 85 | 45 | 49 |
| 27 | 28 | 60 | 535 | 7,960 | 1,340 | 1,540 | 1,540 | 1,570 | 248 | 85 | 45 | 49 |
| 28 | 28 | 60 | 1,630 | 5,480 | 1,240 | 1,540 | 1,440 | 1,570 | 238 | 85 | 42 | 49 |
| 29 | 28 | 60 | 735 | 3,710 | 1,100 | 1,440 | 8,160 | 1,370 | 220 | 81 | 42 | 49 |
| 30 | 28 | 60 | 595 | 3,140 | ..... | 1,340 | 9,860 | 1,180 | 214 | 81 | 42 | 45 |
| 31 | 28 | ..... | 1,110 | 2,470 | ..... | 1,240 | ..... | 1,090 | ..... | 81 | 42 | ..... |

*Daily discharge, in second-feet, of Mad River near Arcata, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Date. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912-13. | | | | | | | | | | | | |
| 1 | 55 | 250 | 475 | 4,600 | 2,840 | 825 | 3,480 | 980 | 382 | 207 | 65 | 40 |
| 2 | 49 | 260 | 450 | 3,220 | 2,960 | 825 | 3,090 | 900 | 365 | 195 | 65 | 40 |
| 3 | 49 | 290 | 505 | 2,600 | 2,600 | 1,320 | 2,960 | 825 | 354 | 195 | 65 | 37 |
| 4 | 45 | 350 | 665 | 2,240 | 2,480 | 1,280 | 2,720 | 825 | 338 | 183 | 60 | 37 |
| 5 | 45 | 900 | 535 | 1,750 | 2,130 | 1,280 | 7,570 | 825 | 321 | 175 | 60 | 37 |
| 6 | 45 | 15,500 | 475 | 1,700 | 2,020 | 1,280 | 5,050 | 788 | 310 | 175 | 60 | 37 |
| 7 | 45 | 7,800 | 425 | 1,500 | 2,130 | 1,280 | 4,160 | 788 | 285 | 207 | 60 | 37 |
| 8 | 45 | 4,050 | 375 | 2,720 | 2,360 | 1,280 | 3,480 | 750 | 270 | 195 | 60 | 37 |
| 9 | 42 | 4,660 | 375 | 2,240 | 2,360 | 1,280 | 2,960 | 900 | 260 | 175 | 56 | 37 |
| 10 | 42 | 6,180 | 375 | 1,910 | 2,360 | 1,320 | 2,480 | 1,320 | 238 | 158 | 56 | 37 |
| 11 | 42 | 4,200 | 375 | 1,500 | 2,130 | 1,180 | 2,020 | 1,410 | 215 | 134 | 56 | 37 |
| 12 | 42 | 3,320 | 895 | 2,600 | 2,130 | 1,060 | 2,960 | 1,460 | 207 | 116 | 56 | 32 |
| 13 | 42 | 2,400 | 1,950 | 14,400 | 1,800 | 900 | 3,350 | 1,600 | 207 | 105 | 50 | 32 |
| 14 | 38 | 4,820 | 4,200 | 9,280 | 1,700 | 900 | 2,840 | 1,360 | 195 | 105 | 50 | 32 |
| 15 | 38 | 3,460 | 9,870 | 7,750 | 1,700 | 788 | 2,480 | 1,140 | 175 | 98 | 50 | 32 |
| 16 | 33 | 2,650 | 17,800 | 6,520 | 1,700 | 750 | 2,240 | 1,060 | 175 | 90 | 44 | 32 |
| 17 | 30 | 2,060 | 13,000 | 5,370 | 1,910 | 750 | 1,910 | 980 | 175 | 90 | 44 | 32 |
| 18 | 30 | 1,530 | 7,930 | 15,300 | 1,650 | 1,060 | 1,700 | 940 | 175 | 85 | 44 | 32 |
| 19 | 38 | 3,040 | 5,690 | 8,500 | 1,600 | 1,410 | 1,600 | 900 | 238 | 85 | 44 | 32 |
| 20 | 42 | 3,040 | 4,160 | 6,180 | 1,460 | 1,500 | 1,410 | 825 | 215 | 85 | 44 | 32 |
| 21 | 42 | 2,280 | 4,020 | 4,020 | 1,230 | 1,600 | 1,320 | 750 | 175 | 85 | 44 | 32 |
| 22 | 42 | 1,530 | 2,600 | 3,350 | 1,140 | 1,800 | 1,320 | 715 | 175 | 85 | 44 | 32 |
| 23 | 60 | 1,200 | 2,240 | 3,090 | 1,060 | 2,240 | 1,230 | 680 | 175 | 80 | 40 | 32 |
| 24 | 80 | 1,060 | 1,910 | 2,600 | 980 | 2,020 | 1,180 | 645 | 175 | 80 | 40 | 32 |
| 25 | 95 | 935 | 1,800 | 2,600 | 900 | 1,550 | 1,140 | 610 | 207 | 80 | 40 | 32 |
| 26 | 130 | 700 | 1,700 | 2,600 | 862 | 1,410 | 1,060 | 545 | 215 | 80 | 40 | 32 |
| 27 | 220 | 595 | 1,410 | 2,600 | 825 | 1,410 | 980 | 545 | 238 | 80 | 40 | 32 |
| 28 | 220 | 535 | 1,360 | 2,600 | 825 | 3,880 | 980 | 545 | 260 | 80 | 40 | 32 |
| 29 | 230 | 475 | 2,480 | 2,720 | ..... | 5,210 | 1,020 | 512 | 224 | 72 | 40 | 32 |
| 30 | 240 | 475 | 7,570 | 2,600 | ..... | 4,450 | 980 | 480 | 207 | 72 | 40 | 32 |
| 31 | 230 | ..... | 4,300 | 2,840 | ..... | 3,880 | ..... | 432 | ..... | 72 | 40 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Dec. 28, 1910, to Jan. 25, 1912, and Nov. 6, 1912, to Dec. 16, 1912, poorly defined; Jan. 26 to May 1, 1912, poorly defined; May 2 to Oct. 22, 1912, well defined below 1,000 second-feet; Dec. 17, 1912, to Sept. 30, 1913, well defined below 8,000 second-feet; Oct. 23 to Nov. 5, 1912, discharge determined by indirect method for shifting channels. Estimates for high water have been based on extension of rating curves and are only approximate.

*Monthly discharge of Mad River near Arcata, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| January | 14,800 | 200 | 3,390 | 208,000 | C. |
| February | 6,540 | 1,110 | 3,020 | 168,000 | C. |
| March | 5,820 | 935 | 2,190 | 135,000 | C. |
| April | 8,400 | 630 | 2,160 | 129,000 | C. |
| May | 6,720 | 535 | 1,320 | 81,200 | C. |
| June | 535 | 142 | 273 | 16,200 | C. |
| July | 142 | 50 | 82.7 | 5,080 | C. |
| August | 50 | 32 | 36.8 | 2,260 | C. |
| September | 32 | 25 | 25.9 | 1,540 | C. |
| The period | ..... | ..... | ..... | 746,000 | |
| 1911-12. | | | | | |
| October | 37 | 25 | 29.5 | 1,810 | C. |
| November | 700 | 25 | 121 | 7,200 | C. |
| December | 1,630 | 60 | 262 | 16,100 | C. |
| January | 19,000 | 335 | 3,760 | 231,000 | C. |
| February | 18,000 | 1,100 | 3,270 | 188,000 | C. |
| March | 4,310 | 885 | 2,110 | 130,000 | C. |
| April | 9,860 | 695 | 1,540 | 91,600 | B. |
| May | 15,100 | 670 | 2,290 | 141,000 | B. |
| June | 1,040 | 214 | 416 | 24,800 | B. |
| July | 190 | 81 | 125 | 7,690 | B. |
| August | 81 | 42 | 54.8 | 3,370 | B. |
| September | 640 | 45 | 128 | 7,620 | B. |
| The year | 19,000 | 25 | 1,170 | 850,000 | |

*Monthly discharge of Mad River near Arcata, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912–13. | | | | | |
| October | 240 | 30 | 78.3 | 4,810 | B. |
| November | 15,500 | 250 | 2,680 | 159,000 | C. |
| December | 17,800 | 375 | 3,290 | 202,000 | C. |
| January | 15,300 | 1,500 | 4,310 | 265,000 | B. |
| February | 2,960 | 825 | 1,780 | 98,900 | B. |
| March | 5,210 | 750 | 1,670 | 103,000 | B. |
| April | 7,570 | 980 | 2,390 | 142,000 | B. |
| May | 1,600 | 432 | 872 | 53,600 | B. |
| June | 382 | 175 | 238 | 14,200 | B. |
| July | 207 | 72 | 120 | 7,380 | B. |
| August | 65 | 40 | 49.6 | 3,050 | B. |
| September | 40 | 32 | 34.0 | 2,020 | B. |
| The year | 17,800 | 32 | 1,460 | 1,050,000 | |

## REDWOOD CREEK BASIN.

### REDWOOD CREEK NEAR KORBEL, CAL.

LOCATION.—In the SE. ¼ sec. 28, T. 7 N., R. 3 E., at highway bridge at Bair's ranch, 200 feet above Minor Creek, and about 9 miles northeast of Korbel.

RECORDS AVAILABLE.—September 4, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—82 square miles.

GAGE.—Temporary staff gage located just above mouth of Minor Creek used until October 14, 1911, when permanent chain gage was installed on bridge at same datum as staff gage. Length of chain, 35.10 feet. On September 18, 1912, a vertical staff in two sections, fastened to tree on left bank 60 feet below bridge, was installed at same datum as chain gage.

CHANNEL.—Sand and gravel; shifts slightly at high stages.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curve well defined; results good.

*Discharge measurements of Redwood Creek near Korbel, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 31 | Charles Leidl | 5.95 | 44 | Apr. 17 | Charles Leidl | 7.21 | 334 |
| Jan. 19 | do | 8.97 | 1,430 | May 2 | do | 6.74 | 208 |
| 20 | do | 8.48 | 1,100 | June 11 | H. D. McGlashan | 5.93 | 56 |
| 27 | do | 7.60 | 496 | 12 | Charles Leidl | 5.91 | 54 |
| Feb. 28 | do | 6.45 | 140 | 28 | do | 6.06 | 83 |
| Mar. 1 | do | 6.42 | 135 | Sept. 10 | do | 5.40 | 8.4 |
| 6 | do | 6.50 | 144 | 10 | do | 5.40 | 8.2 |

*Daily gage height, in feet, of Redwood Creek near Korbel, Cal., for the year ending Sept. 30, 1913.*

[John Brett, F. W. Cook, J. W. McCune, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.62 | 6.12 | 6.55 | 8.45 | 7.55 | 6.41 | 7.65 | 6.84 | 6.20 | 5.92 | 5.60 |
| 2 | 5.60 | 6.25 | 6.55 | 8.15 | 7.5 | 6.48 | 7.75 | 6.76 | 6.20 | 5.90 | 5.60 |
| 3 | 5.52 | 6.40 | 6.55 | 7.9 | 7.45 | 6.59 | 7.8 | 6.74 | 6.15 | 6.12 | 5.58 |
| 4 | 5.60 | 6.02 | 6.80 | 7.8 | 7.35 | 6.52 | 7.8 | 6.75 | 6.10 | 6.15 | 5.58 |
| 5 | 5.60 | 9.6 | 6.52 | 7.45 | 7.3 | 6.51 | 8.4 | 6.78 | 6.05 | 6.05 | 5.58 |
| 6 | 5.60 | 11.2 | 6.50 | 7.5 | 7.25 | 6.50 | 7.95 | 6.76 | 6.00 | 5.99 | 5.58 |
| 7 | 5.60 | 8.1 | 6.45 | 7.4 | 7.2 | 6.50 | 7.75 | 6.79 | 6.00 | 5.92 | 5.55 |
| 8 | 5.58 | 7.75 | 6.50 | 7.85 | 7.25 | 6.60 | 7.65 | 6.80 | 6.00 | 5.84 | 5.55 |
| 9 | 5.50 | 7.9 | 6.20 | 7.6 | 7.2 | 6.61 | 7.5 | 7.0 | 6.00 | 5.81 | 5.50 |
| 10 | 5.45 | 8.3 | 6.28 | 7.45 | 7.2 | 6.61 | 7.45 | 7.2 | 6.00 | 5.80 | 5.50 |
| 11 | 5.35 | 7.9 | 6.45 | 7.6 | 7.15 | 6.59 | 7.40 | 7.1 | 5.93 | 5.80 | ..... |
| 12 | 5.30 | 7.85 | 6.75 | 7.9 | 7.1 | 6.48 | 7.45 | 7.3 | 5.91 | 5.80 | ..... |
| 13 | 5.32 | 7.7 | 7.4 | 10.2 | 7.05 | 6.45 | 7.5 | 7.0 | 6.00 | 5.78 | ..... |
| 14 | 5.31 | 8.9 | 8.3 | 9.4 | 7.05 | 6.39 | 7.4 | 7.0 | 5.96 | 5.78 | ..... |
| 15 | 5.32 | 8.8 | 10.0 | 8.8 | 7.0 | 6.36 | 7.4 | 6.92 | 5.90 | 5.75 | ..... |
| 16 | 5.45 | 7.6 | 11.4 | 8.4 | 6.95 | 6.34 | 7.3 | 6.85 | 5.96 | 5.75 | ..... |
| 17 | 5.60 | 7.55 | 10.4 | 8.7 | 7.1 | 6.42 | 7.2 | 6.79 | 5.90 | 5.72 | ..... |
| 18 | 5.62 | 7.45 | 9.1 | 10.8 | 7.0 | 6.55 | 7.2 | 6.80 | 5.90 | 5.70 | ..... |
| 19 | 5.58 | 7.95 | 8.9 | 8.8 | 6.95 | 6.70 | 7.1 | 6.76 | 6.10 | 5.70 | ..... |
| 20 | 5.72 | 7.6 | 8.3 | 8.5 | 6.90 | 6.80 | 7.05 | 6.69 | 6.00 | 5.65 | ..... |
| 21 | 5.68 | 7.55 | 8.0 | 8.3 | 6.85 | 7.2 | 7.0 | 6.64 | 5.90 | 5.62 | ..... |
| 22 | 5.80 | 7.35 | 7.65 | 8.25 | 6.80 | 7.05 | 6.99 | 6.60 | 5.95 | 5.62 | ..... |
| 23 | 5.92 | 7.25 | 7.85 | 7.95 | 6.80 | 7.05 | 6.96 | 6.59 | 6.00 | 5.75 | ..... |
| 24 | 5.95 | 7.0 | 7.65 | 7.85 | 6.80 | 6.98 | 6.95 | 6.56 | 6.00 | 5.74 | ..... |
| 25 | 6.12 | 7.05 | 7.5 | 7.8 | 6.60 | 6.81 | 6.96 | 6.45 | 5.98 | 5.70 | ..... |
| 26 | 5.92 | 6.75 | 7.45 | 7.7 | 6.70 | 6.80 | 6.98 | 6.39 | 5.98 | 5.70 | ..... |
| 27 | 6.02 | 6.82 | 7.35 | 7.7 | 6.60 | 6.98 | 6.99 | 6.40 | 6.10 | 5.70 | ..... |
| 28 | 6.25 | 6.70 | 7.35 | 7.7 | 6.48 | 8.05 | 6.86 | 6.39 | 6.06 | 5.60 | ..... |
| 29 | 6.72 | 6.70 | 7.75 | 7.6 | ..... | 8.3 | 6.95 | 6.32 | 6.00 | 5.60 | ..... |
| 30 | 6.25 | 6.70 | 9.4 | 7.6 | ..... | 8.0 | 6.81 | 6.22 | 6.00 | 5.60 | ..... |
| 31 | 6.10 | ..... | 9.0 | 7.6 | ..... | 7.9 | ..... | 6.20 | ..... | 5.60 | ..... |

*Daily discharge, in second-feet, of Redwood Creek near Korbel, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 49 | 108 | 1,040 | 472 | 132 | 520 | 224 | 96 | 55 | 18 |
| 2 | 17 | 63 | 108 | 820 | 450 | 144 | 572 | 204 | 96 | 52 | 18 |
| 3 | 14 | 83 | 108 | 660 | 430 | 166 | 600 | 200 | 88 | 83 | 17 |
| 4 | 17 | 41 | 156 | 600 | 390 | 152 | 600 | 202 | 80 | 88 | 17 |
| 5 | 17 | 1,780 | 103 | 430 | 370 | 150 | 1,000 | 209 | 73 | 73 | 17 |
| 6 | 17 | 3,730 | 99 | 450 | 352 | 148 | 690 | 204 | 66 | 65 | 17 |
| 7 | 17 | 649 | 91 | 410 | 335 | 148 | 572 | 212 | 66 | 55 | 14 |
| 8 | 16 | 469 | 99 | 630 | 352 | 168 | 520 | 214 | 66 | 45 | 14 |
| 9 | 13 | 543 | 57 | 495 | 335 | 170 | 450 | 270 | 66 | 41 | 11 |
| 10 | 11 | 764 | 77 | 430 | 335 | 170 | 430 | 335 | 66 | 40 | 11 |
| 11 | 8 | 543 | 91 | 495 | 318 | 166 | 410 | 300 | 56 | 40 | ..... |
| 12 | 6 | 518 | 146 | 660 | 300 | 144 | 420 | 370 | 53 | 40 | ..... |
| 13 | 7 | 445 | 320 | 2,690 | 285 | 139 | 450 | 270 | 66 | 38 | ..... |
| 14 | 6 | 1,180 | 764 | 1,850 | 285 | 128 | 410 | 270 | 60 | 38 | ..... |
| 15 | 7 | 1,100 | 2,200 | 1,320 | 270 | 123 | 410 | 246 | 52 | 34 | ..... |
| 16 | 11 | 400 | 4,020 | 1,000 | 255 | 119 | 370 | 227 | 52 | 34 | ..... |
| 17 | 17 | 379 | 2,930 | 1,240 | 300 | 134 | 335 | 212 | 52 | 30 | ..... |
| 18 | 18 | 339 | 1,580 | 3,430 | 270 | 158 | 335 | 214 | 52 | 28 | ..... |
| 19 | 16 | 569 | 1,400 | 1,320 | 255 | 190 | 300 | 204 | 80 | 28 | ..... |
| 20 | 22 | 400 | 925 | 1,080 | 240 | 214 | 285 | 188 | 66 | 23 | ..... |
| 21 | 20 | 379 | 720 | 925 | 227 | 335 | 270 | 177 | 52 | 20 | ..... |
| 22 | 26 | 303 | 520 | 890 | 214 | 285 | 267 | 168 | 59 | 20 | ..... |
| 23 | 33 | 270 | 630 | 690 | 214 | 285 | 258 | 166 | 66 | 34 | ..... |
| 24 | 36 | 202 | 520 | 630 | 214 | 264 | 255 | 160 | 66 | 33 | ..... |
| 25 | 49 | 214 | 450 | 600 | 168 | 217 | 258 | 139 | 63 | 28 | ..... |
| 26 | 33 | 146 | 430 | 545 | 190 | 214 | 264 | 128 | 63 | 28 | ..... |
| 27 | 41 | 160 | 390 | 545 | 168 | 264 | 267 | 130 | 80 | 28 | ..... |
| 28 | 63 | 136 | 390 | 545 | 144 | 752 | 230 | 128 | 74 | 18 | ..... |
| 29 | 140 | 136 | 572 | 495 | ..... | 925 | 255 | 116 | 66 | 18 | ..... |
| 30 | 63 | 136 | 1,850 | 495 | ..... | 720 | 217 | 99 | 66 | 18 | ..... |
| 31 | 47 | ..... | 1,490 | 495 | ..... | 660 | ..... | 96 | ..... | 18 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1 to Dec. 16, 1912, fairly well defined (same as used for Feb. 18 to Sept. 30, 1912); Dec. 17, 1912, to Aug. 10, 1913, well defined.

*Monthly discharge of Redwood Creek near Korbel, Cal., for the year ending Sept. 30, 1913.*

[Drainage area, 81 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| October | 140 | 6 | 26.6 | 0.328 | 0.38 | 1,640 | C. |
| November | 3,730 | 41 | 538 | 6.64 | 7.41 | 32,000 | B. |
| December | 4,020 | 57 | 753 | 9.30 | 10.72 | 46,300 | B. |
| January | 3,430 | 410 | 900 | 11.1 | 12.80 | 55,300 | A. |
| February | 472 | 144 | 291 | 3.59 | 3.74 | 16,200 | A. |
| March | 925 | 119 | 258 | 3.19 | 3.68 | 15,900 | A. |
| April | 1,000 | 217 | 408 | 5.04 | 5.62 | 24,300 | A. |
| May | 370 | 96 | 203 | 2.51 | 2.89 | 12,500 | A. |
| June | 96 | 52 | 66.9 | .826 | .92 | 3,980 | B. |
| July | 88 | 18 | 38.5 | .475 | .55 | 2,370 | B. |
| August 1-10 | 18 | 11 | 15.4 | .190 | .07 | 305 | B. |
| The period | | | | | | 211,000 | |

## REDWOOD CREEK AT ORICK, CAL.

LOCATION.—In the NE. ¼ sec. 4, T. 10 N., R. 1 E., at highway bridge at Orick, 1 mile below mouth of Prairie Creek, and about 1½ miles above mouth.

RECORDS AVAILABLE.—September 10, 1911, to August 9, 1913, when station was discontinued.

DRAINAGE AREA.—262 square miles.

GAGE.—Vertical staff fastened to piling at bridge on left bank August 28, 1912, to replace chain gage on bridge near left bank; April 12, 1913, new vertical staff in two sections was installed at same location; original datum maintained.

CHANNEL.—Gravel and sand; shifting.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

ACCURACY.—Results only fair owing to frequent changes in channel; high-water estimates approximate.

*Discharge measurements of Redwood Creek at Orick, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 4 | 5.12 | 51 | Feb. 22 | 6.52 | 511 | June 19 | 5.37 | 194 |
| Nov. 19 | 8.58 | 2,310 | Apr. 10 | 7.78 | 1,460 | Sept. 17 | 4.52 | 26 |
| 20 | 8.91 | 2,580 | 12 | 7.48 | 1,390 | 17 | 4.52 | 26 |
| 21 | 8.26 | 1,810 | June 4 | 5.50 | 221 | | | |

*Daily gage height, in feet, of Redwood Creek at Orick, Cal., for the year ending Sept. 30, 1913.*

[R. F. Gruber and Miss Fay Griffin, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.20 | 10.1 | 6.75 | 10.0 | 7.7 | 6.5 | 8.1 | 7.15 | 5.70 | 5.10 | 4.85 |
| 2 | 5.18 | 10.8 | 6.7 | 9.3 | 7.6 | 6.48 | 8.8 | 7.1 | 5.60 | 5.10 | 4.85 |
| 3 | 5.14 | 11.4 | 6.65 | 8.8 | 7.6 | 6.48 | 9.3 | 7.05 | 5.50 | 5.10 | 4.85 |
| 4 | 5.09 | 12.4 | 6.6 | 9.0 | 7.5 | 6.42 | 10.2 | 7.0 | 5.50 | 5.10 | 4.82 |
| 5 | 5.06 | 13.6 | 6.55 | 9.4 | 7.4 | 6.40 | 9.7 | 6.95 | 5.45 | 5.10 | 4.80 |
| 6 | 5.02 | 14.8 | 6.5 | 9.7 | 7.35 | 6.40 | 9.2 | 6.75 | 5.45 | 5.10 | 4.80 |
| 7 | 5.00 | 14.3 | 6.6 | 10.0 | 7.2 | 6.40 | 8.6 | 6.55 | 5.40 | 5.08 | 4.80 |
| 8 | 5.00 | 12.6 | 6.9 | 9.8 | 7.1 | 6.35 | 8.4 | 6.35 | 5.40 | 5.08 | 4.80 |
| 9 | 5.00 | 10.2 | 7.3 | 9.0 | 7.0 | 6.35 | 8.2 | 6.25 | 5.35 | 5.08 | 4.75 |
| 10 | 5.00 | 10.1 | 7.6 | 8.2 | 7.0 | 6.30 | 7.6 | 6.28 | 5.35 | 5.08 | ..... |
| 11 | 4.92 | 9.6 | 7.8 | 8.3 | 6.95 | 6.26 | 7.55 | 6.45 | 5.30 | 5.08 | ..... |
| 12 | 4.90 | 9.2 | 8.2 | 8.7 | 6.9 | 6.18 | 7.8 | 6.42 | 5.30 | 5.08 | ..... |
| 13 | 4.92 | 9.1 | 8.6 | 12.1 | 6.85 | 6.12 | 7.75 | 6.38 | 5.30 | 5.05 | ..... |
| 14 | 4.94 | 9.0 | 8.9 | 12.3 | 6.8 | 6.06 | 7.75 | 6.30 | 5.30 | 5.05 | ..... |
| 15 | 4.91 | 8.8 | 10.2 | 11.6 | 6.8 | 6.00 | 7.7 | 6.28 | 5.25 | 5.05 | ..... |
| 16 | 4.90 | 8.7 | 14.0 | 11.0 | 6.8 | 6.02 | 7.6 | 6.25 | 5.25 | 5.05 | ..... |
| 17 | 4.92 | 8.5 | 13.9 | 11.7 | 6.8 | 6.15 | 7.55 | 6.20 | 5.25 | 5.05 | ..... |
| 18 | 4.91 | 8.2 | 13.6 | 14.4 | 6.75 | 6.30 | 7.5 | 6.20 | 5.20 | 5.00 | ..... |
| 19 | 5.06 | 8.4 | 13.2 | 13.2 | 6.7 | 6.5 | 7.5 | 6.20 | 5.20 | 5.00 | ..... |
| 20 | 5.11 | 8.9 | 12.9 | 11.7 | 6.7 | 6.8 | 7.5 | 6.15 | 5.20 | 5.00 | ..... |
| 21 | 5.12 | 8.5 | 12.5 | 9.1 | 6.7 | 7.3 | 7.45 | 6.15 | 5.15 | 4.95 | ..... |
| 22 | 5.50 | 8.0 | 12.0 | 9.1 | 6.65 | 7.8 | 7.45 | 6.15 | 5.15 | 4.95 | ..... |
| 23 | 6.05 | 7.65 | 11.0 | 9.0 | 6.65 | 7.95 | 7.4 | 6.10 | 5.15 | 4.90 | ..... |
| 24 | 5.85 | 7.4 | 10.6 | 8.9 | 6.6 | 7.85 | 7.4 | 6.10 | 5.15 | 4.95 | ..... |
| 25 | 5.82 | 7.3 | 9.7 | 8.8 | 6.6 | 7.65 | 7.35 | 6.10 | 5.15 | 5.00 | ..... |
| 26 | 6.08 | 7.15 | 9.2 | 8.6 | 6.6 | 7.3 | 7.3 | 6.10 | 5.15 | 5.00 | ..... |
| 27 | 5.92 | 7.0 | 8.1 | 8.4 | 6.55 | 7.7 | 7.3 | 6.00 | 5.10 | 4.95 | ..... |
| 28 | 6.05 | 6.9 | 9.0 | 8.2 | 6.55 | 7.85 | 7.25 | 6.00 | 5.10 | 4.95 | ..... |
| 29 | 6.28 | 6.8 | 10.1 | 8.0 | ..... | 8.0 | 7.2 | 6.00 | 5.10 | 4.90 | ..... |
| 30 | 7.35 | 6.8 | 11.0 | 7.9 | ..... | 8.1 | 7.2 | 5.90 | 5.10 | 4.90 | ..... |
| 31 | 8.9 | ..... | 10.9 | 7.8 | ..... | 8.1 | ..... | 5.85 | ..... | 4.85 | ..... |

*Daily discharge, in second-feet, of Redwood Creek at Orick, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | | |
| 1 | ..... | 15 | 14 | 26 | 1,610 | 1,180 | 1,250 | 625 | 8,040 | 730 | 1 | 60 | 376 |
| 2 | ..... | 14 | 13 | 20 | 988 | 1,062 | 1,170 | 550 | 5,750 | 670 | 6 | 59 | 324 |
| 3 | ..... | 13 | 12 | 18 | 345 | 1,260 | 1,030 | 520 | 4,160 | 640 | 10 | 59 | 270 |
| 4 | ..... | 12 | 12 | 26 | 365 | 1,520 | 1,210 | 500 | 3,100 | 555 | 25 | 55 | 209 |
| 5 | ..... | 17 | 12 | 47 | 2,090 | 1,340 | 1,440 | 452 | 2,620 | 505 | 82 | 55 | 166 |
| 6 | ..... | 26 | 15 | 57 | 3,520 | 1,100 | 1,990 | 425 | 2,170 | 480 | 166 | 55 | 140 |
| 7 | ..... | 34 | 20 | 51 | 2,880 | 845 | 2,520 | 407 | 2,060 | 480 | 212 | 53 | 120 |
| 8 | ..... | 40 | 30 | 38 | 2,640 | 915 | 2,300 | 380 | 1,760 | 455 | 298 | 52 | 116 |
| 9 | ..... | 43 | 99 | 30 | 3,650 | 1,100 | 1,890 | 438 | 1,660 | 432 | 376 | 52 | 112 |
| 10 | 18 | 47 | 325 | 23 | 3,390 | 1,260 | 1,440 | 570 | 1,390 | 432 | 344 | 50 | 110 |
| 11 | 18 | 47 | 317 | 18 | 2,880 | 1,520 | 1,100 | 550 | 1,270 | 455 | 250 | 50 | 108 |
| 12 | 18 | 51 | 285 | 18 | 3,390 | 1,700 | 995 | 520 | 1,230 | 480 | 212 | 48 | 104 |
| 13 | 18 | 51 | 268 | 34 | 8,030 | 2,410 | 995 | 495 | 1,110 | 505 | 197 | 47 | 100 |
| 14 | 18 | 54 | 305 | 57 | 5,530 | 3,930 | 1,320 | 456 | 1,080 | 505 | 166 | 47 | 100 |
| 15 | 18 | 54 | 365 | 72 | 3,260 | 3,930 | 1,700 | 420 | 1,000 | 480 | 140 | 46 | 96 |
| 16 | 16 | 53 | 365 | 110 | 2,300 | 7,320 | 2,190 | 402 | 965 | 455 | 122 | 44 | 96 |
| 17 | 15 | 48 | 234 | 166 | 1,800 | 15,700 | 2,410 | 360 | 930 | 389 | 108 | 44 | 91 |
| 18 | 14 | 46 | 160 | 171 | 1,100 | 10,900 | 2,630 | 505 | 860 | 324 | 102 | 44 | 86 |
| 19 | 13 | 41 | 70 | 86 | 1,340 | 6,540 | 1,990 | 710 | 834 | 224 | 98 | 43 | 84 |
| 20 | 12 | 35 | 23 | 53 | 1,340 | 5,800 | 1,560 | 770 | 795 | 138 | 93 | 42 | 82 |
| 21 | 11 | 26 | 47 | 36 | 950 | 5,100 | 1,400 | 625 | 895 | 80 | 91 | 42 | 79 |
| 22 | 10 | 20 | 79 | 27 | 778 | 4,960 | 1,210 | 545 | 1,000 | 47 | 86 | 42 | 74 |
| 23 | 10 | 20 | 74 | 34 | 1,260 | 4,680 | 1,100 | 652 | 860 | 28 | 82 | 46 | 68 |
| 24 | 10 | 18 | 68 | 46 | 3,130 | 4,400 | 995 | 770 | 860 | 18 | 80 | 82 | 63 |
| 25 | 13 | 16 | 64 | 60 | 8,990 | 3,870 | 930 | 995 | 965 | 14 | 79 | 224 | 55 |
| 26 | 18 | 16 | 57 | 115 | 8,670 | 2,990 | 865 | 1,210 | 1,110 | 11 | 76 | 224 | 48 |
| 27 | 18 | 16 | 54 | 325 | 6,910 | 2,190 | 865 | 1,700 | 1,150 | 9 | 74 | 610 | 47 |
| 28 | 18 | 15 | 51 | 680 | 4,780 | 1,710 | 1,560 | 2,190 | 1,150 | 7 | 69 | 610 | 42 |
| 29 | 17 | 14 | 39 | 880 | 3,130 | 1,320 | 770 | 2,750 | 1,080 | 4 | 68 | 610 | 46 |
| 30 | 16 | 14 | 30 | 1,020 | 1,890 | ..... | 710 | 4,130 | 1,000 | 1 | 66 | 480 | 51 |
| 31 | ..... | 14 | ..... | 1,340 | 1,520 | ..... | 625 | ..... | 828 | ..... | 63 | 410 | ..... |

*Daily discharge, in second-feet, of Redwood Creek at Orick, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 52 | 3,750 | 640 | 3,870 | 1,310 | 500 | 1,660 | 1,050 | 288 | 118 | 68 |
| 2 | 50 | 4,720 | 610 | 2,990 | 1,230 | 490 | 2,390 | 1,020 | 256 | 118 | 68 |
| 3 | 46 | 5,600 | 582 | 2,390 | 1,230 | 490 | 2,990 | 980 | 226 | 118 | 68 |
| 4 | 41 | 7,110 | 555 | 2,630 | 1,150 | 460 | 4,130 | 945 | 226 | 118 | 63 |
| 5 | 39 | 9,030 | 528 | 3,110 | 1,080 | 450 | 3,680 | 912 | 211 | 118 | 60 |
| 6 | 36 | 11,100 | 500 | 3,480 | 1,040 | 450 | 3,060 | 785 | 211 | 118 | 60 |
| 7 | 34 | 10,300 | 555 | 3,870 | 930 | 450 | 2,370 | 668 | 196 | 114 | 60 |
| 8 | 34 | 7,950 | 730 | 3,510 | 860 | 425 | 2,150 | 560 | 196 | 114 | 60 |
| 9 | 34 | 4,130 | 1,000 | 2,630 | 795 | 425 | 1,950 | 510 | 182 | 114 | 53 |
| 10 | 34 | 4,000 | 1,230 | 1,760 | 795 | 400 | 1,400 | 525 | 182 | 114 | ..... |
| 11 | 28 | 3,350 | 1,400 | 1,850 | 762 | 382 | 1,360 | 612 | 168 | 114 | ..... |
| 12 | 26 | 2,870 | 1,760 | 2,270 | 730 | 347 | 1,570 | 596 | 168 | 114 | ..... |
| 13 | 28 | 2,750 | 2,160 | 6,840 | 700 | 323 | 1,520 | 575 | 168 | 107 | ..... |
| 14 | 29 | 2,630 | 2,510 | 7,140 | 670 | 301 | 1,520 | 535 | 168 | 107 | ..... |
| 15 | 27 | 2,390 | 4,130 | 6,090 | 670 | 280 | 1,480 | 525 | 155 | 107 | ..... |
| 16 | 26 | 2,270 | 9,800 | 5,240 | 670 | 287 | 1,400 | 510 | 155 | 107 | ..... |
| 17 | 28 | 2,050 | 9,640 | 6,240 | 670 | 335 | 1,360 | 485 | 155 | 107 | ..... |
| 18 | 27 | 1,760 | 9,160 | 10,400 | 640 | 400 | 1,320 | 485 | 142 | 96 | ..... |
| 19 | 39 | 1,950 | 8,520 | 8,520 | 610 | 500 | 1,320 | 485 | 142 | 96 | ..... |
| 20 | 43 | 2,510 | 8,040 | 6,240 | 610 | 670 | 1,320 | 462 | 142 | 96 | ..... |
| 21 | 44 | 2,050 | 7,440 | 2,750 | 610 | 1,000 | 1,280 | 462 | 130 | 86 | ..... |
| 22 | 100 | 1,570 | 6,690 | 2,750 | 582 | 1,400 | 1,280 | 462 | 130 | 86 | ..... |
| 23 | 240 | 1,270 | 5,240 | 2,630 | 582 | 1,520 | 1,240 | 440 | 130 | 76 | ..... |
| 24 | 180 | 1,080 | 4,680 | 2,510 | 555 | 1,440 | 1,240 | 440 | 130 | 86 | ..... |
| 25 | 172 | 1,000 | 3,480 | 2,390 | 555 | 1,270 | 1,200 | 440 | 130 | 96 | ..... |
| 26 | 250 | 895 | 2,870 | 2,160 | 555 | 1,000 | 1,160 | 440 | 130 | 96 | ..... |
| 27 | 200 | 795 | 1,660 | 1,950 | 528 | 1,310 | 1,160 | 397 | 118 | 86 | ..... |
| 28 | 240 | 730 | 2,630 | 1,760 | 528 | 1,440 | 1,120 | 397 | 118 | 86 | ..... |
| 29 | 320 | 670 | 4,000 | 1,570 | ..... | 1,570 | 1,080 | 397 | 118 | 76 | ..... |
| 30 | 895 | 670 | 5,240 | 1,480 | ..... | 1,660 | 1,080 | 358 | 118 | 76 | ..... |
| 31 | 2,280 | ..... | 5,100 | 1,400 | ..... | 1,660 | ..... | 340 | ..... | 68 | ..... |

NOTE.—Daily discharge determined from poorly defined rating curves applicable as follows: Sept. 10, 1911 to Feb. 17, 1912; Feb. 18 to May 1, 1912; May 2 to Nov. 6, 1912; Nov. 7, 1912, to Apr. 4, 1913; and Apr. 5 to Aug. 9, 1913.

*Monthly discharge of Redwood Creek at Orick, Cal., for the years ending Sept. 30, 1911–1913.*

[Drainage area, 262 square miles.]

| Month. | Discharge in second-feet. | | | | Run-off. | | Accuracy. |
|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| 1911. | | | | | | | |
| September 10–30 | 18 | 10 | 15.2 | 0.058 | 0.05 | 633 | C. |
| 1911–12. | | | | | | | |
| October | 54 | 12 | 30.0 | .115 | .13 | 1,840 | C. |
| November | 365 | 12 | 117 | .447 | .50 | 6,960 | C. |
| December | 1,340 | 18 | 183 | .691 | .80 | 11,300 | C. |
| January | 8,990 | 345 | 3,050 | 11.6 | 13.37 | 188,000 | C. |
| February | 15,700 | 845 | 3,530 | 13.5 | 14.06 | 203,000 | D. |
| March | 2,630 | 625 | 1,420 | 5.42 | 6.25 | 87,300 | C. |
| April | 4,130 | 360 | 854 | 3.26 | 3.64 | 50,800 | C. |
| May | 8,040 | 795 | 1,730 | 6.60 | 7.61 | 106,000 | C. |
| June | 730 | 1 | 318 | 1.21 | 1.35 | 18,900 | C. |
| July | 376 | 1 | 124 | .473 | .55 | 7,620 | C. |
| August | 610 | 42 | 141 | .538 | .62 | 8,670 | C. |
| September | 376 | 42 | 115 | .439 | .49 | 6,840 | C. |
| The year | 15,700 | 1 | 961 | 3.67 | 49.37 | 697,000 | |
| 1912–13. | | | | | | | |
| October | 2,280 | 26 | 181 | .691 | .80 | 11,100 | C. |
| November | 11,000 | 670 | 3,420 | 13.1 | 14.62 | 204,000 | C. |
| December | 9,800 | 500 | 3,650 | 13.9 | 16.03 | 224,000 | C. |
| January | 10,400 | 1,400 | 3,690 | 14.1 | 16.26 | 227,000 | C. |
| February | 1,310 | 528 | 773 | 2.95 | 3.07 | 42,900 | C. |
| March | 1,660 | 280 | 716 | 2.73 | 3.15 | 44,000 | C. |
| April | 4,130 | 1,080 | 1,730 | 6.60 | 7.36 | 103,000 | C. |
| May | 1,050 | 340 | 574 | 2.19 | 2.52 | 35,300 | C. |
| June | 288 | 118 | 166 | .634 | .71 | 9,880 | C. |
| July | 118 | 68 | 101 | .385 | .44 | 6,210 | C. |
| August 1–9 | 68 | 53 | 62.2 | .237 | .08 | 1,110 | C. |
| The period | ..... | ..... | ..... | ..... | ..... | 908,000 | |

## KLAMATH RIVER BASIN.

### WILLIAMSON RIVER ABOVE SPRING CREEK, NEAR CHILOQUIN, OREG.

LOCATION.—In sec. 24, T. 33 S., R. 7 E., at the falls 4 miles below Rocky Ford, 5 miles above the mouth of Spring Creek, and 8 miles above Chiloquin; prior to May 1, 1912, in sec. 1, T. 33 S., R. 7 E., at Rocky Ford, 12 miles above Chiloquin.

RECORDS AVAILABLE.—March 26, 1908, to June 30, 1910; May 1, 1912, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—1,180 square miles.

GAGE.—Vertical staff on left bank.

CHANNEL.—Solid rock, station is in box canyon.

DISCHARGE MEASUREMENTS.—Made from cable 80 feet above the gage, or from gaging bridge.

WINTER FLOW.—Discharge relation apparently not affected by ice.

ACCURACY.—Conditions good, except for the low velocity at low stages. Results reliable.

COOPERATION.—Station maintained in cooperation with the United States Indian Service.

*Discharge measurements of Williamson River above Spring Creek, near Chiloquin, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* |
| June 1 | Howard Kimble | 2.06 | 329 |
| Aug. 7 | James E. Stewart | 2.03 | 151 |

*Daily gage height, in feet, of Williamson River above Spring Creek, near Chiloquin, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 3.2 | 3.5 | | 3.1 | | | |
| 2 | | 3.42 | | | | | | | | 2.10 | |
| 3 | | | | 3.6 | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | 2.58 | | | | | | | | 2.30 | | |
| 6 | | | 4.65 | | | | | | | | 1.80 |
| 7 | | | | | | | | 2.9 | | | |
| 8 | | | | | 3.3 | 3.7 | | | | | |
| 9 | | 3.82 | | | | | 6.8 | | | 2.10 | |
| 10 | | | | 3.4 | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | 2.10 | | |
| 13 | 2.50 | | 4.55 | | | | | | | | 1.60 |
| 14 | | | | | | | | 2.5 | | | |
| 15 | | 4.20 | | | 3.1 | | | | | | |
| 16 | | | | | | | | | | 1.95 | |
| 17 | | | | | | | | | | | |
| 18 | 3.02 | | | 3.6 | | | | | | | |
| 19 | | | | | | | | | 2.10 | | |
| 20 | | | 4.08 | | | | | | | | 1.60 |
| 21 | | | | | | | | 2.6 | | | |
| 22 | | 4.40 | | | 3.4 | | | | | | |
| 23 | | | | | | | | | | 1.95 | |
| 24 | | | | | | | | | | | |
| 25 | 3.20 | | | 3.4 | | | | | | | |
| 26 | | | | | | | | | 2.30 | | |
| 27 | | | 3.95 | | | | | | | | 1.65 |
| 28 | | | | | | | | 2.7 | | | |
| 29 | | 4.52 | | | | | | | | | |
| 30 | | | | | | | | | | 1.80 | |
| 31 | | | | | | | | | | | |

NOTE.—No record of any ice at this station. Maximum gage height for the year: 7.3 feet, about Apr. 16, as determined by levels.

*Daily discharge, in second-feet, of Williamson River above Spring Creek, near Chiloquin, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 153 | 192 | | 340 | | | |
| 2 | | 178 | | | | | | | | 158 | |
| 3 | | | | 207 | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | 94 | | | | | | | | 185 | | |
| 6 | | | 428 | | | | | | | | 125 |
| 7 | | | | | | | | 296 | | | |
| 8 | | | | | 165 | 223 | | | | | |
| 9 | | 243 | | | | | 1,270 | | | 158 | |
| 10 | | | | 178 | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | 158 | | |
| 13 | 88 | | 402 | | | | | | | | 108 |
| 14 | | | | | | | | 216 | | | |
| 15 | | 318 | | | 141 | | | | | | |
| 16 | | | | | | | | | | 140 | |
| 17 | | | | | | | | | | | |
| 18 | 129 | | | 207 | | | | | | | |
| 19 | | | | | | | | | 158 | | |
| 20 | | | 292 | | | | | | | | 108 |
| 21 | | | | | | | | 234 | | | |
| 22 | | 364 | | | 178 | | | | | | |
| 23 | | | | | | | | | | 140 | |
| 24 | | | | | | | | | | | |
| 25 | 149 | | | 178 | | | | | | | |
| 26 | | | | | | | | | 185 | | |
| 27 | | | 266 | | | | | | | | 112 |
| 28 | | | | | | | | 254 | | | |
| 29 | | 393 | | | | | | | | | |
| 30 | | | | | | | | | | 125 | |
| 31 | | | | | | | | | | | |

NOTE.—Daily discharge determined from rating curves, as follows: Oct. 1 to Apr. 9, well defined below 600 second-feet; June 1 to Sept. 30, fairly well defined.
Maximum discharge for the year, estimated at 1,900 second-feet, occurred about Apr. 16.

*Monthly discharge of Williamson River above Spring Creek, near Chiloquin, Oreg., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet (mean). | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|
| October | 115 | 7,070 | B. |
| November | 299 | 17,800 | B. |
| December | 347 | 21,300 | B. |
| January | 192 | 11,800 | B. |
| February | 159 | 8,830 | B. |
| June | 268 | 15,900 | B. |
| July | 172 | 10,600 | B. |
| August | 144 | 8,850 | B. |
| September | 113 | 6,720 | B. |

## WILLIAMSON RIVER AT CHILOQUIN, OREG.

LOCATION.—In sec. 3, T. 35 S., R. 7 E., at the highway bridge at Chiloquin, just above the mouth of Sprague River.

RECORDS AVAILABLE.—July 25, 1911, to September 30, 1913.

DRAINAGE AREA.—1,260 square miles.

GAGE.—Vertical staff on bridge.

CHANNEL.—Rocks and gravel; probably permanent. Two channels at high water.

DISCHARGE MEASUREMENTS.—Made from bridge.

WINTER FLOW.—Discharge relation apparently not affected by ice.

ACCURACY.—Conditions not very favorable; channel permanent but measuring conditions poor.

COOPERATION.—Station maintained in cooperation with United States Reclamation Service and the United States Indian Service.

*Discharge measurements of Williamson River at Chiloquin, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Mar. 6 | H. W. Hincks | 4.20 | 576 | Apr. 17 | J. W. Malin | 6.50 | 2,420 |
| Apr. 1 | C. R. Hauke | 4.58 | 799 | June 1 | Howard Kimble | 4.32 | 676 |
| 5 | do | 4.80 | 959 | Aug. 6 | James E. Stewart | 4.06 | 538 |
| 9 | J. W. Malin | 5.50 | 1,630 | 6 | do | 4.06 | 531 |

*Daily gage height, in feet, of Williamson River at Chiloquin, Oreg., for the year ending Sept. 30, 1913.*

[A. Gentry and H. W. Hincks, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.0 | 3.9 | 3.9 | 4.3 | 4.0 | 4.0 | 4.6 | 5.2 | 4.4 | 4.2 | 4.1 | 3.95 |
| 2 | 4.0 | 3.9 | 3.9 | 4.3 | 4.0 | 4.0 | 4.6 | 5.2 | 4.4 | 4.2 | 4.1 | 3.95 |
| 3 | 4.0 | 3.9 | 3.8 | 4.3 | 4.0 | 4.0 | 4.7 | 5.2 | 4.3 | 4.1 | 4.1 | 3.95 |
| 4 | 4.0 | 3.9 | 3.8 | 4.3 | 4.0 | 4.1 | 4.7 | ..... | 4.3 | 4.1 | 4.1 | 3.99 |
| 5 | 3.9 | 3.9 | 3.9 | 4.3 | 4.0 | 4.1 | 4.8 | 5.2 | 4.2 | 4.1 | 4.0 | 3.55 |
| 6 | 3.9 | 3.9 | 3.9 | 4.3 | 4.0 | 4.1 | 4.9 | 5.1 | 4.2 | 4.1 | 4.0 | 3.95 |
| 7 | 3.9 | 3.9 | 3.9 | 4.3 | 4.0 | 4.1 | ..... | 5.0 | 4.2 | 4.1 | 4.0 | 3.95 |
| 8 | 3.9 | 4.0 | 3.9 | 4.3 | 4.0 | 4.1 | 5.2 | 4.8 | 4.2 | 4.1 | 4.0 | 3.95 |
| 9 | 4.0 | 3.9 | 3.9 | 4.3 | 4.0 | 4.1 | 5.6 | 4.9 | 4.2 | 4.1 | 4.0 | 3.95 |
| 10 | 4.0 | 3.8 | 3.9 | 4.3 | 4.0 | 4.1 | 6.0 | 4.8 | 4.2 | 4.1 | 4.0 | 3.95 |
| 11 | 4.0 | 3.8 | 3.9 | 4.3 | 4.0 | 4.1 | ..... | 4.8 | 4.2 | 4.1 | 4.0 | 3.95 |
| 12 | 3.9 | 3.9 | 3.8 | 4.3 | 4.0 | 4.1 | 6.3 | 4.8 | 4.2 | 4.1 | 4.0 | 4.3 |
| 13 | 3.9 | 3.8 | 3.8 | 4.3 | 4.0 | 4.1 | 6.3 | 4.8 | 4.2 | 4.1 | 4.0 | 4.0 |
| 14 | 3.9 | 3.8 | 3.9 | 4.3 | 4.0 | 4.2 | 6.4 | 4.8 | 4.2 | 4.1 | 4.0 | 4.0 |
| 15 | 3.9 | 3.8 | 3.9 | 4.3 | 4.0 | 4.2 | 6.5 | 4.8 | 4.2 | 4.1 | 4.0 | 4.0 |
| 16 | 3.9 | 3.8 | 3.9 | 4.3 | 4.0 | 4.2 | 6.6 | 4.8 | 4.1 | 4.1 | 4.0 | 4.0 |
| 17 | 3.9 | 3.9 | 3.9 | 4.3 | 4.0 | 4.2 | 6.4 | 4.7 | 4.2 | 4.1 | 4.0 | 4.0 |
| 18 | 3.9 | 3.8 | 3.9 | 4.3 | 4.0 | 4.2 | 6.3 | 4.7 | 4.2 | 4.1 | 4.0 | 3.95 |
| 19 | 3.9 | 3.9 | 3.9 | 4.2 | 4.0 | 4.2 | 6.2 | 4.7 | 4.2 | 4.1 | 4.0 | 3.95 |
| 20 | 3.9 | 4.0 | 3.9 | 4.2 | 4.0 | 4.2 | 6.2 | 4.7 | 4.2 | ..... | 4.0 | 3.95 |
| 21 | 3.9 | 3.8 | 3.9 | 4.1 | 4.0 | 4.2 | 6.1 | 4.6 | 4.1 | ..... | 4.0 | 3.95 |
| 22 | 3.9 | 3.7 | 3.9 | 4.1 | 4.0 | 4.2 | 6.0 | 4.6 | 4.1 | 4.1 | 4.0 | 3.95 |
| 23 | 3.9 | 3.7 | 3.9 | 4.1 | 4.0 | 4.3 | ..... | 4.6 | 4.1 | 4.1 | 4.0 | 3.95 |
| 24 | 4.0 | 3.7 | 3.9 | 4.0 | 4.0 | 4.2 | 5.8 | ..... | 4.1 | 4.1 | 4.0 | 3.90 |
| 25 | 3.9 | 3.8 | 3.9 | 4.0 | 4.0 | 4.3 | 5.7 | 4.5 | 4.1 | 4.1 | 4.0 | 3.85 |
| 26 | 3.9 | 3.9 | 3.9 | 4.0 | 4.0 | 4.2 | 5.6 | 4.5 | 4.2 | 4.1 | 4.0 | 3.85 |
| 27 | 3.9 | 3.9 | 3.9 | 4.1 | 4.0 | 4.3 | ..... | 4.4 | 4.2 | 4.1 | 4.0 | 3.85 |
| 28 | 3.9 | 3.9 | 3.9 | 4.1 | 4.0 | 4.3 | 5.3 | 4.4 | 4.2 | 4.1 | 4.0 | 3.85 |
| 29 | 3.9 | 3.9 | 4.0 | 4.1 | ..... | 4.4 | 5.2 | ..... | 4.2 | 4.1 | 4.0 | 3.95 |
| 30 | 3.9 | 3.9 | 4.0 | 4.0 | ..... | 4.5 | 5.2 | 4.4 | 4.2 | 4.1 | 4.0 | 3.95 |
| 31 | 3.9 | 3.9 | ..... | 4.0 | ..... | 4.5 | ..... | 4.4 | ..... | 4.1 | 4.0 | ..... |

*Daily discharge, in second-feet, of Williamson River at Chiloquin, Oreg., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | 520 | 475 | 11 | 520 | 475 | 21 | 475 | 475 |
| 2 | 520 | 475 | 12 | 520 | 475 | 22 | 475 | 475 |
| 3 | 520 | 475 | 13 | 520 | 475 | 23 | 475 | 475 |
| 4 | 520 | 475 | 14 | 520 | 475 | 24 | 475 | 475 |
| 5 | 520 | 475 | 15 | 520 | 475 | 25 | 475 | 475 |
| 6 | 520 | 475 | 16 | 520 | 475 | 26 | 475 | 475 |
| 7 | 520 | 475 | 17 | 520 | 475 | 27 | 475 | 475 |
| 8 | 520 | 475 | 18 | 520 | 475 | 28 | 475 | 475 |
| 9 | 520 | 475 | 19 | 520 | 475 | 29 | 475 | 475 |
| 10 | 520 | 475 | 20 | 475 | 475 | 30 | 475 | 475 |
| | | | | | | 31 | 475 | ..... |

*Daily discharge, in second-feet, of Williamson River at Chiloquin, Oreg., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 475 | 610 | 765 | 610 | 890 | 1,280 | 1,040 | 765 | 610 | 520 | 475 | 475 |
| 2 | 475 | 610 | 765 | 610 | 890 | 1,280 | 1,040 | 765 | 610 | 520 | 475 | 475 |
| 3 | 475 | 610 | 765 | 610 | 960 | 1,280 | 960 | 825 | 610 | 520 | 475 | 435 |
| 4 | 475 | 610 | 765 | 610 | 960 | 1,280 | 960 | 825 | 610 | 520 | 475 | 435 |
| 5 | 475 | 610 | 765 | 610 | 960 | 1,280 | 960 | 825 | 610 | 475 | 475 | 475 |
| 6 | 475 | 610 | 765 | 610 | 960 | 1,360 | 890 | 825 | 610 | 475 | 475 | 475 |
| 7 | 475 | 610 | 765 | 610 | 1,040 | 1,360 | 890 | 825 | 565 | 475 | 475 | 475 |
| 8 | 475 | 610 | 765 | 610 | 1,040 | 1,360 | 890 | 765 | 565 | 475 | 520 | 475 |
| 9 | 475 | 610 | 765 | 610 | 1,040 | 1,280 | 890 | 765 | 565 | 520 | 475 | 475 |
| 10 | 475 | 610 | 765 | 610 | 1,040 | 1,280 | 890 | 710 | 565 | 520 | 435 | 475 |
| 11 | 475 | 610 | 765 | 610 | 1,040 | 1,280 | 890 | 710 | 565 | 520 | 435 | 475 |
| 12 | 475 | 610 | 765 | 610 | 1,040 | 1,280 | 890 | 710 | 565 | 475 | 475 | 435 |
| 13 | 520 | 610 | 765 | 610 | 1,120 | 1,200 | 890 | 710 | 565 | 475 | 435 | 435 |
| 14 | 565 | 610 | 765 | 610 | 1,200 | 1,200 | 890 | 710 | 565 | 475 | 435 | 475 |
| 15 | 565 | 610 | 765 | 610 | 1,280 | 1,200 | 825 | 710 | 565 | 475 | 435 | 475 |
| 16 | 520 | 660 | 765 | 610 | 1,360 | 1,120 | 825 | 660 | 565 | 475 | 435 | 475 |
| 17 | 565 | 660 | 765 | 610 | 1,360 | 1,120 | 825 | 660 | 565 | 475 | 475 | 475 |
| 18 | 565 | 660 | 765 | 660 | 1,360 | 1,120 | 825 | 710 | 565 | 475 | 435 | 475 |
| 19 | 565 | 660 | 765 | 660 | 1,360 | 1,120 | 825 | 710 | 565 | 475 | 475 | 475 |
| 20 | 565 | 660 | 765 | 660 | 1,360 | 1,120 | 825 | 660 | 565 | 475 | 520 | 475 |
| 21 | 565 | 660 | 710 | 660 | 1,360 | 1,120 | 825 | 660 | 520 | 475 | 435 | 475 |
| 22 | 565 | 710 | 710 | 660 | 1,360 | 1,120 | 825 | 660 | 520 | 475 | 395 | 475 |
| 23 | 565 | 710 | 660 | 710 | 1,360 | 1,120 | 825 | 660 | 520 | 475 | 395 | 475 |
| 24 | 565 | 710 | 660 | 710 | 1,360 | 1,040 | 765 | 660 | 520 | 520 | 395 | 475 |
| 25 | 565 | 710 | 610 | 765 | 1,360 | 1,040 | 765 | 660 | 520 | 475 | 435 | 475 |
| 26 | 610 | 710 | 610 | 765 | 1,360 | 1,040 | 765 | 610 | 520 | 475 | 475 | 475 |
| 27 | 610 | 710 | 610 | 765 | 1,360 | 1,040 | 765 | 610 | 520 | 475 | 475 | 475 |
| 28 | 610 | 765 | 610 | 765 | 1,360 | 1,040 | 765 | 660 | 520 | 475 | 475 | 475 |
| 29 | 610 | 765 | 610 | 765 | 1,280 | 1,040 | 765 | 660 | 520 | 475 | 475 | 520 |
| 30 | 610 | 765 | 610 | 825 | ..... | 1,040 | 765 | 660 | 520 | 475 | 475 | 520 |
| 31 | 610 | ..... | 610 | 825 | ..... | 1,040 | ..... | 660 | ..... | 475 | 475 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 520 | 610 | 765 | 660 | 520 | 520 | 825 | 1,280 | 710 | 610 | 565 | 498 |
| 2 | 520 | 610 | 765 | 660 | 520 | 520 | 825 | 1,280 | 710 | 610 | 565 | 498 |
| 3 | 520 | 610 | 765 | 660 | 520 | 520 | 890 | 1,280 | 660 | 565 | 565 | 498 |
| 4 | 520 | 660 | 710 | 660 | 520 | 565 | 890 | 1,280 | 660 | 565 | 565 | 498 |
| 5 | 565 | 660 | 710 | 660 | 520 | 565 | 960 | 1,280 | 610 | 565 | 520 | 498 |
| 6 | 565 | 660 | 710 | 660 | 520 | 565 | 1,040 | 1,200 | 610 | 565 | 520 | 498 |
| 7 | 565 | 660 | 710 | 660 | 520 | 565 | 1,160 | 1,120 | 610 | 565 | 520 | 498 |
| 8 | 520 | 660 | 710 | 660 | 520 | 565 | 1,280 | 960 | 610 | 565 | 520 | 498 |
| 9 | 520 | 660 | 710 | 660 | 520 | 565 | 1,620 | 1,040 | 610 | 565 | 520 | 498 |
| 10 | 520 | 660 | 710 | 660 | 520 | 565 | 1,980 | 960 | 610 | 565 | 520 | 498 |
| 11 | 520 | 660 | 710 | 660 | 520 | 565 | 2,120 | 960 | 610 | 565 | 520 | 498 |
| 12 | 520 | 660 | 710 | 660 | 520 | 565 | 2,250 | 960 | 610 | 565 | 520 | 660 |
| 13 | 520 | 660 | 710 | 660 | 520 | 565 | 2,250 | 960 | 610 | 565 | 520 | 520 |
| 14 | 520 | 660 | 710 | 660 | 520 | 610 | 2,340 | 960 | 610 | 565 | 520 | 520 |
| 15 | 520 | 660 | 710 | 660 | 520 | 610 | 2,430 | 960 | 610 | 565 | 520 | 520 |
| 16 | 520 | 660 | 710 | 660 | 520 | 610 | 2,520 | 960 | 565 | 565 | 520 | 520 |
| 17 | 520 | 710 | 710 | 660 | 520 | 610 | 2,340 | 890 | 610 | 565 | 520 | 520 |
| 18 | 520 | 710 | 710 | 660 | 520 | 610 | 2,250 | 890 | 610 | 565 | 520 | 498 |
| 19 | 520 | 710 | 710 | 610 | 520 | 610 | 2,160 | 890 | 610 | 565 | 520 | 498 |
| 20 | 520 | 710 | 710 | 610 | 520 | 610 | 2,160 | 890 | 610 | 565 | 520 | 498 |
| 21 | 520 | 765 | 710 | 565 | 520 | 610 | 2,070 | 825 | 565 | 565 | 520 | 498 |
| 22 | 520 | 765 | 710 | 565 | 520 | 610 | 1,980 | 825 | 565 | 565 | 520 | 498 |
| 23 | 520 | 765 | 710 | 565 | 520 | 660 | 1,890 | 825 | 565 | 565 | 520 | 498 |
| 24 | 520 | 765 | 710 | 520 | 520 | 610 | 1,800 | 795 | 565 | 565 | 520 | 475 |
| 25 | 520 | 765 | 710 | 520 | 520 | 660 | 1,710 | 765 | 565 | 565 | 520 | 455 |
| 26 | 565 | 765 | 710 | 520 | 520 | 610 | 1,620 | 765 | 610 | 565 | 520 | 455 |
| 27 | 565 | 765 | 710 | 565 | 520 | 660 | 1,490 | 710 | 610 | 565 | 520 | 455 |
| 28 | 565 | 765 | 710 | 565 | 520 | 660 | 1,360 | 710 | 610 | 565 | 520 | 455 |
| 29 | 610 | 765 | 710 | 565 | ..... | 710 | 1,280 | 710 | 610 | 565 | 520 | 498 |
| 30 | 610 | 765 | 710 | 520 | ..... | 765 | 1,280 | 790 | 610 | 565 | 520 | 498 |
| 31 | 610 | ..... | 710 | 520 | ..... | 765 | ..... | 710 | ..... | 565 | 520 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge Aug. 1, 1911, to June 30, 1912, supersedes that published in Water Supply Paper 300, p. 845.

*Monthly discharge of Williamson River at Chiloquin, Oreg., for the years ending Sept 30, 1911-1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August | 520 | 475 | 503 | 30,900 | B. |
| September | 475 | 475 | 475 | 28,300 | B. |
| 1911-12. | | | | | |
| October | 610 | 475 | 536 | 33,000 | B. |
| November | 765 | 610 | 656 | 39,000 | B. |
| December | 765 | 610 | 720 | 44,300 | B. |
| January | 825 | 610 | 663 | 40,800 | B. |
| February | 1,360 | 890 | 1,190 | 68,400 | B. |
| March | 1,360 | 1,040 | 1,180 | 72,600 | B. |
| April | 1,040 | 765 | 858 | 51,100 | B. |
| May | 825 | 610 | 710 | 43,700 | B. |
| June | 610 | 520 | 559 | 33,300 | B. |
| July | 520 | 475 | 487 | 29,900 | B. |
| August | 520 | 395 | 459 | 28,200 | B. |
| September | 520 | 435 | 473 | 28,100 | B. |
| The year | 1,360 | 395 | 705 | 512,000 | |
| 1912-13. | | | | | |
| October | 610 | 520 | 537 | 33,000 | B. |
| November | 765 | 610 | 697 | 41,500 | B. |
| December | 765 | 710 | 715 | 44,000 | B. |
| January | 660 | 520 | 616 | 37,900 | B. |
| February | 520 | 520 | 520 | 28,900 | B. |
| March | 765 | 520 | 606 | 37,300 | B. |
| April | 2,520 | 825 | 1,690 | 101,000 | B. |
| May | 1,280 | 710 | 947 | 58,200 | A. |
| June | 710 | 565 | 611 | 36,400 | A. |
| July | 610 | 565 | 568 | 34,900 | A. |
| August | 565 | 520 | 526 | 32,300 | A. |
| September | 660 | 455 | 501 | 29,800 | A. |
| The year | 2,520 | 455 | 711 | 515,000 | |

UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OREG.

LOCATION.—In sec. 30, T. 38 S., R. 9 E., at the outlet of Upper Klamath Lake about 2 miles northwest of Klamath Falls.

RECORDS AVAILABLE.—May 28 to October 22, 1904; January 7, 1906, to September 30, 1913.

GAGE.—Friez water-stage recorder since February 16, 1906, vertical staff prior to that date. Zero is 4,136.13 feet above sea level.

ACCURACY.—Gage heights are very much affected by the wind. The water is lowered as much as 6 inches near the outlet when the wind blows from the south, and is raised as much above its normal level when the wind is in the opposite direction. There is a periodic oscillation when the wind blows for any length of time.

COOPERATION.—Since May, 1909, this station has been maintained by the United States Reclamation Service.

*Daily gage height, in feet, of Upper Klamath Lake near Klamath Falls, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 5.05 | 4.47 | 5.10 | 6.25 | 5.80 | ..... | 4.80 | 4.50 |
| 2 | 4.63 | ..... | 5.15 | 6.20 | 5.90 | ..... | 4.80 | 4.18 |
| 3 | 4.63 | ..... | 5.20 | 6.10 | 5.74 | ..... | 4.80 | 4.18 |
| 4 | 4.98 | ..... | 5.25 | 6.10 | 5.74 | ..... | 4.84 | 4.40 |
| 5 | 4.95 | ..... | 5.30 | 6.08 | 5.74 | 5.20 | 4.90 | 4.55 |
| 6 | 4.53 | 4.75 | 5.48 | 6.08 | 5.74 | ..... | 4.93 | 4.55 |
| 7 | 4.48 | 4.85 | 5.50 | 6.00 | 5.60 | ..... | 4.97 | 4.48 |
| 8 | 4.78 | 4.80 | 5.60 | 5.65 | 5.60 | ..... | 4.88 | 4.62 |
| 9 | 4.81 | 4.65 | 5.64 | 5.86 | 5.70 | ..... | 4.80 | 4.52 |
| 10 | 4.60 | 4.89 | 5.58 | 5.80 | 5.65 | ..... | 4.70 | 4.51 |
| 11 | 4.49 | 4.58 | 5.15 | 5.85 | 5.60 | ..... | ..... | 4.49 |
| 12 | 4.49 | 4.35 | ..... | 6.08 | 5.50 | 5.02 | ..... | 4.40 |
| 13 | 4.47 | 4.38 | ..... | 6.00 | 5.60 | ..... | ..... | 4.50 |
| 14 | 4.48 | 4.41 | 5.95 | 5.90 | 5.60 | 5.08 | ..... | 4.45 |
| 15 | 4.49 | 4.44 | 5.98 | 5.90 | 5.50 | 5.00 | ..... | 4.45 |
| 16 | 4.52 | 4.60 | 6.05 | 5.94 | 5.48 | 5.00 | 4.50 | 4.41 |
| 17 | 4.60 | 4.94 | 6.15 | 5.95 | 5.36 | 5.03 | ..... | 4.40 |
| 18 | 4.66 | 4.93 | 6.18 | 6.05 | 5.25 | ..... | ..... | ..... |
| 19 | 4.65 | 5.00 | 6.08 | 6.02 | 5.34 | 4.90 | ..... | ..... |
| 20 | 4.72 | 5.00 | 6.21 | 5.98 | 5.30 | 4.89 | ..... | 4.35 |
| 21 | 4.71 | 4.90 | 6.30 | 5.96 | 5.30 | 4.80 | ..... | 4.53 |
| 22 | 4.85 | 4.90 | 6.30 | 6.00 | 5.30 | 4.80 | ..... | 4.48 |
| 23 | 5.15 | 4.90 | 6.30 | 5.98 | 5.35 | 4.71 | 4.70 | 4.40 |
| 24 | 4.70 | 4.95 | 6.24 | 5.96 | 5.40 | 4.80 | 4.62 | 4.35 |
| 25 | 4.20 | 4.90 | 6.25 | 5.90 | 5.30 | ..... | 4.62 | 4.55 |
| 26 | 4.42 | 4.90 | 6.25 | 5.80 | ..... | 4.88 | 4.65 | 4.33 |
| 27 | 4.56 | 4.90 | 6.30 | 5.90 | ..... | 4.94 | 4.60 | 4.31 |
| 28 | 4.63 | 4.95 | 6.10 | 6.04 | 5.30 | 4.95 | 4.59 | 4.47 |
| 29 | 4.68 | 4.97 | 6.10 | 5.95 | ..... | 4.95 | 4.60 | 4.50 |
| 30 | 4.69 | 4.95 | 6.28 | 5.90 | ..... | 4.90 | 4.55 | 4.48 |
| 31 | 4.53 | ..... | ..... | 5.80 | ..... | 4.86 | 4.60 | ..... |

NOTE.—Lake was frozen December to March.

## LINK RIVER AT KLAMATH FALLS, OREG.

LOCATION.—In sec. 32, T. 38 S., R. 9 E., near foot of rapids between Upper Klamath Lake and Lake Ewanna, at Klamath Falls.

RECORDS AVAILABLE.—May 15, 1904, to September 30, 1913.

GAGE.—Since September 14, 1912, Friez water-stage recorder referred to vertical staff on left bank above lowest rapids. Original gage was a vertical staff at highway bridge; read to April 2, 1908; replaced by a chain gage which was read to September 7, 1912. From June 6, 1908, to August 31, 1912, the Friez recorder was located on right bank above present site and at different datum.

CHANNEL.—Probably permanent.

DISCHARGE MEASUREMENTS.—Made at county bridge about 500 yards below gage.

WINTER FLOW.—Discharge relation seldom affected by ice.

DIVERSIONS.—The Keno Canal diverts water from right bank of river above gage for use in Moore Bros.' power plant. Water returned to the river below gage but above measuring section. The amount of the diversion is practically constant at about 200 second-feet, and the record has been computed as if it passed the gage.

ACCURACY.—Results good since Friez recorder was moved in September, 1912. Earlier records somewhat uncertain.[1]

COOPERATION.—Field data furnished by U. S. Reclamation Service.

[1] See McGlashan, H. D., and Stevens, G. C., Surface water supply of the United States, 1912, Part 11, Pacific coast basins in California: U. S. Geol. Survey Water-Supply Paper 331, p. 365, 1914.

*Discharge measurements of Link River at Klamath Falls, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 28 | Leland Moser | 6.00 | 2,000 | Aug. 4 | James E. Stewart | 5.94 | 1,870 |
| Mar. 4 | do | 6.00 | 2,010 | Sept. 27 | Leland Moser | 5.42 | 1,240 |
| 31 | do | 6.25 | 2,400 | Nov. 13 | R. R. Randell | 5.76 | 1,730 |
| Apr. 19 | do | 7.15 | 3,750 | 18 | do | 5.77 | 1,750 |
| June 12 | do | 6.60 | 2,870 | | | | |

*Daily gage height, in feet, of Link River at Klamath Falls, Oreg., for the period Sept. 14, 1912, to Sept. 30, 1913.*

[Gertrude Beals, observer.]

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 5.63 | 5.63 | 5.89 | 6.10 | 6.15 | 6.00 | 6.30 | 7.05 | 6.85 | 6.50 | 6.05 | 5.60 |
| 2 | ..... | 5.55 | 5.58 | 5.85 | 6.10 | 6.15 | 6.00 | 6.25 | 7.00 | 6.85 | 6.45 | 6.00 | 5.65 |
| 3 | ..... | 5.57 | 5.65 | 6.15 | 6.05 | 6.15 | 6.00 | 6.25 | 7.00 | 6.85 | 6.40 | 6.00 | 5.60 |
| 4 | ..... | 5.73 | 5.60 | 6.05 | 6.05 | 6.15 | 6.00 | 6.20 | 7.00 | 6.85 | 6.40 | 6.00 | 5.70 |
| 5 | ..... | 5.70 | 5.62 | 5.97 | 6.10 | 6.15 | 6.00 | 6.20 | 7.05 | 6.80 | 6.40 | 6.00 | 5.65 |
| 6 | ..... | 5.56 | 5.80 | 5.93 | 6.15 | 6.15 | 6.00 | 6.65 | 6.90 | 6.75 | 6.35 | 6.00 | 5.55 |
| 7 | ..... | 5.52 | 5.75 | 5.91 | 6.10 | 6.15 | 6.00 | 6.70 | 6.95 | 6.75 | 6.30 | 5.95 | 5.55 |
| 8 | ..... | 5.62 | 5.65 | 5.90 | 6.15 | 6.15 | 6.00 | 6.75 | ..... | 6.70 | 6.30 | 5.90 | 5.60 |
| 9 | ..... | 5.55 | 5.68 | 5.90 | 6.10 | 6.15 | 6.00 | 6.80 | ..... | 6.70 | 6.30 | 5.85 | 5.55 |
| 10 | ..... | 5.52 | 5.85 | 5.90 | 6.10 | 6.10 | 6.05 | 6.80 | ..... | 6.70 | 6.25 | 5.80 | 5.55 |
| 11 | ..... | 5.53 | 5.83 | 5.90 | 6.10 | 6.10 | 6.05 | 6.70 | 7.05 | 6.70 | ..... | 5.75 | 5.50 |
| 12 | ..... | 5.54 | 5.81 | 5.90 | 6.15 | 6.05 | 6.10 | 6.60 | 7.10 | 6.70 | ..... | 5.80 | 5.50 |
| 13 | ..... | 5.54 | 5.88 | 5.93 | 6.15 | 6.05 | 6.10 | 6.80 | 7.05 | 6.70 | 6.20 | ..... | 5.55 |
| 14 | 5.63 | 5.54 | 5.93 | 5.90 | 6.20 | 6.05 | 6.10 | 6.95 | 7.00 | 6.70 | 6.20 | ..... | 5.50 |
| 15 | 5.55 | 5.54 | 5.93 | 6.00 | 6.20 | 6.00 | 6.10 | 6.95 | 7.00 | 6.55 | 6.05 | ..... | 5.50 |
| 16 | 5.55 | 5.55 | 5.93 | 6.10 | 6.20 | 6.00 | 6.10 | 7.05 | 7.00 | 6.55 | 6.05 | ..... | 5.50 |
| 17 | 5.55 | 5.60 | 5.95 | 5.97 | 6.25 | 6.00 | 6.10 | 7.15 | 7.05 | 6.50 | 6.00 | 5.75 | 5.50 |
| 18 | 5.57 | 5.54 | 5.87 | 5.98 | 6.30 | 6.00 | 6.10 | 7.25 | 7.00 | 6.40 | 6.00 | 5.75 | 5.50 |
| 19 | 5.59 | 5.55 | 6.00 | 6.00 | 6.25 | 6.00 | 6.15 | 7.15 | 6.95 | 6.40 | 6.00 | 5.70 | 5.50 |
| 20 | 5.60 | 5.58 | 5.98 | 6.00 | 6.25 | 6.00 | 6.15 | 7.25 | 6.95 | 6.40 | 6.00 | 5.70 | 5.47 |
| 21 | 5.53 | 5.52 | 5.98 | 6.05 | 6.25 | 5.98 | 6.15 | 7.30 | 6.95 | 6.45 | 5.95 | 5.65 | 5.60 |
| 22 | 5.54 | 5.55 | 5.98 | 6.05 | 6.25 | 6.00 | 6.20 | 7.25 | 6.95 | 6.45 | 5.90 | 5.65 | 5.55 |
| 23 | 5.58 | 5.55 | 5.95 | ..... | 6.25 | 6.05 | 6.20 | 7.25 | 6.90 | 6.45 | 5.95 | 5.65 | 5.48 |
| 24 | 5.55 | 5.49 | 5.95 | ..... | 6.20 | 6.00 | 6.20 | 7.25 | 6.90 | 6.45 | 6.05 | 5.60 | 5.45 |
| 25 | 5.53 | 5.43 | 5.95 | ..... | 6.20 | 6.00 | 6.20 | 7.25 | 6.90 | 6.45 | 6.10 | 5.65 | 5.45 |
| 26 | 5.50 | 5.55 | 5.95 | ..... | 6.20 | 6.00 | 6.15 | 7.30 | ..... | 6.50 | 6.10 | 5.70 | 5.43 |
| 27 | 5.50 | 5.64 | 5.94 | ..... | 6.20 | 6.00 | 6.15 | 7.35 | ..... | 6.55 | 6.10 | 5.65 | 5.42 |
| 28 | 5.58 | 5.56 | 5.93 | 6.05 | 6.20 | 6.00 | 6.15 | 7.25 | ..... | 6.50 | 6.10 | 5.60 | 5.50 |
| 29 | 5.55 | 5.65 | 5.93 | 6.10 | 6.20 | ..... | 6.20 | 7.05 | ..... | 6.45 | 6.10 | 5.65 | 5.55 |
| 30 | 5.57 | 5.67 | 5.91 | 6.10 | 6.20 | ..... | 6.25 | 7.15 | ..... | 6.50 | 6.10 | 5.70 | 5.50 |
| 31 | ..... | 5.65 | ..... | 6.10 | 6.20 | ..... | 6.30 | ..... | 6.80 | ..... | 6.05 | 5.80 | ..... |

*Daily discharge, in second-feet, of Link River at Klamath Falls, Oreg., for the period Sept. 14, 1912, to Sept. 30, 1913.*

| Day. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 1,510 | 1,510 | 1,850 | 2,150 | 2,220 | 2,000 | 2,450 | 3,580 | 3,280 | 2,750 | 2,080 | 1,470 |
| 2 | ..... | 1,410 | 1,450 | 1,800 | 2,150 | 2,220 | 2,000 | 2,380 | 3,500 | 3,280 | 2,680 | 2,000 | 1,410 |
| 3 | ..... | 1,430 | 1,540 | 2,220 | 2,080 | 2,220 | 2,000 | 2,380 | 3,500 | 3,280 | 2,600 | 2,000 | 1,470 |
| 4 | ..... | 1,640 | 1,470 | 2,080 | 2,080 | 2,220 | 2,000 | 2,300 | 3,500 | 3,280 | 2,600 | 2,000 | 1,600 |
| 5 | ..... | 1,600 | 1,500 | 1,960 | 2,150 | 2,220 | 2,000 | 2,300 | 3,580 | 3,200 | 2,600 | 2,000 | 1,540 |
| 6 | ..... | 1,420 | 1,730 | 1,900 | 2,220 | 2,220 | 2,000 | 2,980 | 3,350 | 3,120 | 2,520 | 2,000 | 1,410 |
| 7 | ..... | 1,370 | 1,660 | 1,870 | 2,150 | 2,220 | 2,000 | 3,050 | 3,420 | 3,120 | 2,450 | 1,930 | 1,410 |
| 8 | ..... | 1,500 | 1,540 | 1,860 | 2,220 | 2,220 | 2,000 | 3,120 | 3,460 | 3,050 | 2,450 | 1,860 | 1,470 |
| 9 | ..... | 1,410 | 1,570 | 1,860 | 2,150 | 2,220 | 2,000 | 3,200 | 3,500 | 3,050 | 2,450 | 1,800 | 1,410 |
| 10 | ..... | 1,370 | 1,800 | 1,860 | 2,150 | 2,150 | 2,080 | 3,200 | 3,540 | 3,050 | 2,380 | 1,730 | 1,410 |
| 11 | ..... | 1,390 | 1,770 | 1,860 | 2,150 | 2,150 | 2,080 | 3,050 | 3,580 | 3,050 | 2,350 | 1,660 | 1,350 |
| 12 | ..... | 1,400 | 1,740 | 1,860 | 2,220 | 2,080 | 2,150 | 2,900 | 3,660 | 3,050 | 2,330 | 1,730 | 1,350 |
| 13 | ..... | 1,400 | 1,830 | 1,900 | 2,220 | 2,080 | 2,150 | 3,200 | 3,580 | 3,050 | 2,300 | 1,720 | 1,410 |
| 14 | 1,510 | 1,400 | 1,900 | 1,860 | 2,300 | 2,080 | 2,150 | 3,420 | 3,500 | 3,050 | 2,300 | 1,700 | 1,350 |
| 15 | 1,410 | 1,400 | 1,900 | 2,000 | 2,300 | 2,000 | 2,150 | 3,420 | 3,500 | 2,820 | 2,080 | 1,690 | 1,350 |
| 16 | 1,410 | 1,410 | 1,900 | 2,150 | 2,300 | 2,000 | 2,150 | 3,580 | 3,500 | 2,820 | 2,080 | 1,670 | 1,350 |
| 17 | 1,410 | 1,470 | 1,930 | 1,960 | 2,380 | 2,000 | 2,150 | 3,740 | 3,580 | 2,750 | 2,000 | 1,660 | 1,350 |
| 18 | 1,430 | 1,400 | 1,820 | 1,970 | 2,450 | 2,000 | 2,150 | 3,900 | 3,500 | 2,600 | 2,000 | 1,660 | 1,350 |
| 19 | 1,460 | 1,410 | 2,000 | 2,000 | 2,380 | 2,000 | 2,220 | 3,740 | 3,420 | 2,600 | 2,000 | 1,600 | 1,350 |
| 20 | 1,470 | 1,450 | 1,970 | 2,000 | 2,380 | 2,000 | 2,220 | 3,900 | 3,420 | 2,600 | 2,000 | 1,600 | 1,310 |
| 21 | 1,390 | 1,370 | 1,970 | 2,080 | 2,380 | 1,970 | 2,220 | 3,980 | 3,420 | 2,680 | 1,930 | 1,540 | 1,470 |
| 22 | 1,400 | 1,410 | 1,970 | 2,080 | 2,380 | 2,000 | 2,300 | 3,900 | 3,420 | 2,680 | 1,860 | 1,540 | 1,410 |
| 23 | 1,450 | 1,410 | 1,930 | 2,080 | 2,380 | 2,080 | 2,300 | 3,900 | 3,350 | 2,680 | 1,930 | 1,540 | 1,330 |
| 24 | 1,410 | 1,340 | 1,930 | 2,080 | 2,300 | 2,000 | 2,300 | 3,900 | 3,350 | 2,680 | 2,080 | 1,470 | 1,290 |
| 25 | 1,390 | 1,270 | 1,930 | 2,080 | 2,300 | 2,000 | 2,300 | 3,900 | 3,350 | 2,680 | 2,150 | 1,540 | 1,290 |
| 26 | 1,350 | 1,410 | 1,930 | 2,080 | 2,300 | 2,000 | 2,220 | 3,980 | 3,320 | 2,750 | 2,150 | 1,600 | 1,270 |
| 27 | 1,350 | 1,520 | 1,920 | 2,080 | 2,300 | 2,000 | 2,220 | 4,060 | 3,300 | 2,820 | 2,150 | 1,540 | 1,250 |
| 28 | 1,450 | 1,420 | 1,900 | 2,080 | 2,300 | 2,000 | 2,220 | 3,900 | 3,280 | 2,750 | 2,150 | 1,470 | 1,350 |
| 29 | 1,410 | 1,540 | 1,900 | 2,150 | 2,300 | ..... | 2,300 | 3,580 | 3,250 | 2,680 | 2,150 | 1,540 | 1,410 |
| 30 | 1,430 | 1,560 | 1,870 | 2,150 | 2,300 | ..... | 2,380 | 3,740 | 3,230 | 2,750 | 2,150 | 1,600 | 1,350 |
| 31 | ..... | 1,540 | ..... | 2,150 | 2,300 | ..... | 2,450 | ..... | 3,200 | ..... | 2,080 | 1,730 | ..... |

NOTE.—Discharge determined from a well-defined rating curve. Discharge Sept. 1–13, 1912, estimated at 1,430 second-feet.

*Monthly discharge of Link River at Klamath Falls, Oreg., for the period Sept. 1, 1912, to Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| September | ..... | ..... | 1,420 | 84,500 | B. |
| 1912–13. | | | | | |
| October | 1,640 | 1,270 | 1,440 | 88,500 | B. |
| November | 2,000 | 1,450 | 1,790 | 107,000 | B. |
| December | 2,220 | 1,800 | 2,000 | 123,000 | B. |
| January | 2,450 | 2,080 | 2,260 | 139,000 | B. |
| February | 2,220 | 1,970 | 2,090 | 116,000 | B. |
| March | 2,450 | 2,000 | 2,160 | 133,000 | B. |
| April | 4,060 | 2,300 | 3,370 | 201,000 | B. |
| May | 3,660 | 3,200 | 3,440 | 212,000 | B. |
| June | 3,280 | 2,600 | 2,910 | 173,000 | B. |
| July | 2,750 | 1,860 | 2,250 | 138,000 | B. |
| August | 2,080 | 1,470 | 1,720 | 106,000 | B. |
| September | 1,600 | 1,250 | 1,380 | 82,100 | B. |
| The year | 4,060 | 1,250 | 2,230 | 1,620,000 | |

## LOWER KLAMATH LAKE NEAR BROWNELL, CAL.

LOCATION.—In sec. 35, T. 47 N., R. 2 E., at Lairds Landing at the extreme southern end of Lower Klamath Lake, about 3 miles southeast of Brownell.

RECORDS AVAILABLE.—August 1, 1912, to September 30, 1913.

GAGE.—Vertical staff.

COOPERATION.—Station maintained by the United States Reclamation Service.

*Daily gage height, in feet, of Lower Klamath Lake near Brownell, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7 | 0.7 | 1.0 | 1.2 | 1.7 | 1.6 | 1.4 | 2.0 | 1.9 | 1.7 | 1.3 | 0.9 |
| 2 | .8 | .7 | 1.0 | 1.1 | 1.7 | 1.6 | 1.4 | 2.0 | 1.9 | 1.7 | 1.3 | .5 |
| 3 | .8 | .7 | 1.0 | 1.1 | 1.7 | 1.6 | 1.4 | 2.0 | 1.9 | 1.7 | 1.3 | .5 |
| 4 | .8 | .7 | .9 | 1.2 | 1.7 | 1.4 | 1.4 | 2.0 | 1.9 | 1.7 | 1.3 | .5 |
| 5 | 1.0 | .5 | .9 | 1.4 | 1.7 | 1.4 | 1.3 | 2.0 | 1.9 | 1.7 | 1.2 | .8 |
| 6 | .8 | .4 | 1.0 | 1.4 | 1.7 | 1.4 | 1.5 | 1.8 | 1.9 | 1.7 | 1.2 | .8 |
| 7 | .7 | .4 | 1.0 | 1.5 | 1.7 | 1.4 | 1.5 | 1.8 | 1.9 | 1.7 | 1.2 | .8 |
| 8 | .7 | .4 | 1.0 | 1.5 | 1.7 | 1.4 | 1.5 | 1.8 | 1.9 | 1.7 | 1.2 | .8 |
| 9 | .7 | .2 | 1.0 | 1.5 | 1.7 | 1.4 | 1.5 | 1.8 | 1.8 | 1.7 | 1.2 | .8 |
| 10 | .8 | .6 | 1.0 | 1.5 | 1.7 | 1.4 | 1.5 | 1.8 | 1.8 | 1.7 | 1.2 | .7 |
| 11 | .8 | .7 | 1.0 | 1.5 | 1.7 | 1.4 | 1.3 | 1.8 | 1.8 | 1.4 | 1.2 | .7 |
| 12 | .7 | .7 | 1.0 | 1.6 | 1.7 | 1.4 | 1.3 | 1.8 | 1.8 | 1.4 | 1.3 | .7 |
| 13 | .7 | .7 | .9 | 1.6 | 1.7 | 1.4 | 1.4 | 1.9 | 1.8 | 1.4 | 1.3 | .7 |
| 14 | .7 | .8 | .9 | 1.6 | 1.7 | 1.3 | 1.4 | 1.9 | 1.8 | 1.4 | 1.2 | .7 |
| 15 | .8 | .8 | 1.0 | 1.6 | 1.7 | 1.3 | 1.6 | 1.9 | 1.8 | 1.3 | 1.2 | .7 |
| 16 | .8 | .8 | 1.0 | 1.6 | 1.6 | 1.4 | 1.6 | 1.9 | 1.8 | 1.3 | 1.2 | .7 |
| 17 | .7 | .8 | 1.0 | 1.7 | 1.6 | 1.4 | 1.6 | 1.8 | 1.8 | 1.3 | 1.2 | .7 |
| 18 | .7 | .8 | .9 | 1.7 | 1.6 | 1.5 | 1.6 | 1.8 | 1.6 | 1.2 | 1.2 | .7 |
| 19 | .8 | .8 | .9 | 1.6 | 1.6 | 1.5 | 1.6 | 1.8 | 1.6 | 1.3 | 1.2 | .7 |
| 20 | .6 | .9 | .9 | 1.6 | 1.6 | 1.4 | 1.6 | 1.8 | 1.6 | 1.2 | 1.1 | .7 |
| 21 | .1 | .9 | 1.0 | 1.7 | 1.6 | 1.4 | 1.8 | 1.9 | 1.6 | 1.2 | 1.1 | .7 |
| 22 | .6 | .9 | 1.0 | 1.7 | 1.6 | 1.4 | 1.8 | 1.9 | 1.6 | 1.2 | 1.0 | .7 |
| 23 | .6 | .9 | 1.0 | 1.7 | 1.6 | 1.4 | 1.8 | 1.9 | 1.6 | 1.3 | 1.0 | .7 |
| 24 | .5 | .8 | 1.0 | 1.7 | 1.6 | 1.4 | 1.8 | 2.0 | 1.6 | 1.3 | 1.0 | .7 |
| 25 | .5 | .8 | 1.0 | 1.7 | 1.6 | 1.4 | 1.9 | 2.0 | 1.6 | 1.6 | 1.0 | .6 |
| 26 | .5 | .8 | 1.1 | 1.7 | 1.6 | 1.4 | 1.9 | 2.0 | 1.7 | 1.6 | 1.0 | .6 |
| 27 | .7 | 1.0 | 1.1 | 1.7 | 1.6 | 1.4 | 1.9 | 1.9 | 1.7 | 1.6 | 1.0 | .6 |
| 28 | .6 | 1.0 | 1.1 | 1.7 | 1.6 | 1.4 | 1.9 | 1.9 | 1.7 | 1.6 | 1.0 | .6 |
| 29 | .7 | 1.0 | 1.2 | 1.7 | ..... | 1.4 | 1.9 | 1.9 | 1.7 | 1.6 | .9 | .6 |
| 30 | .7 | 1.0 | 1.2 | 1.7 | ..... | 1.4 | 2.0 | 1.9 | 1.7 | 1.3 | .9 | .6 |
| 31 | .7 | ..... | 1.2 | 1.7 | ..... | 1.4 | ..... | 1.9 | ..... | 1.3 | .9 | ..... |

## KLAMATH RIVER AT KENO, OREG.

LOCATION.—In sec. 31, T. 39 S., R. 8 E., at the county bridge at Keno.

RECORDS AVAILABLE.—May 31, 1904, to December 31, 1913, when station was discontinued.

DRAINAGE AREA.—3,150 square miles (excluding Lower Klamath Lake drainage area).

GAGE.—Vertical staff nailed to bridge. Datum has not been changed since the station was established.

CHANNEL.—Sand and clay; fairly permanent. Immediately below station the river breaks over a rocky ledge with a fall of about 200 feet to the mile.

DISCHARGE MEASUREMENTS.—Made from cable about 1,000 feet below gage.

DIVERSIONS.—A large quantity of water is diverted for irrigation above the station. There is a considerable loss by evaporation from the lakes.

ACCURACY.—During low water the accuracy of the record is somewhat affected by the growth of aquatic plants. Discharge relation is also affected by wind. Results considered good for periods of a week or more, but for individual days somewhat uncertain. Rating curve used 1906–1913 has been checked by measurements made at Spencer Bridge in 1915 and referred to the datum of the Keno gage.

COOPERATION.—Field data furnished by United States Reclamation Service.

*Discharge measurements of Klamath River at Keno, Oreg., during 1915.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Apr. 12 | Humphrey and Hughes. | 13.29 | 2,940 | July 31 | C. P. Hughes | 11.87 | 869 |
| June 17 | C. P. Hughes | 12.59 | 1,940 | Sept. 8 | H. W. Humphrey | 11.71 | 823 |

NOTE.—Measurements made at Spencer Bridge and referred to datum of gage at Keno.

*Daily gage height, in feet, of Klamath River at Keno, Oreg., for the period Oct. 1, 1912, to Dec. 31, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 12.1 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 13.0 | 13.7 | 13.3 | 13.1 | 12.8 | 12.4 |
| 2 | 12.1 | 12.2 | 12.4 | 12.7 | 12.8 | 12.8 | 13.0 | 13.7 | 13.3 | 13.1 | 12.8 | 12.4 |
| 3 | 12.1 | 12.2 | 12.4 | 12.7 | 12.8 | 12.8 | 13.1 | 13.6 | 13.3 | 13.0 | 12.8 | 12.4 |
| 4 | 12.2 | 12.2 | 12.6 | 12.7 | 12.8 | 12.8 | 13.1 | 13.6 | 13.3 | 13.0 | 12.8 | 12.3 |
| 5 | 12.3 | 12.2 | 12.6 | 12.7 | 12.8 | 12.8 | 13.1 | 13.6 | 13.2 | 13.1 | 12.8 | 12.3 |
| 6 | 12.2 | 12.2 | 12.6 | ..... | 12.8 | 12.8 | 13.2 | 13.6 | 13.2 | 13.0 | 12.8 | 12.3 |
| 7 | 12.2 | 12.3 | 12.5 | ..... | 12.8 | 12.8 | 13.2 | 13.6 | 13.2 | 13.0 | 12.8 | 12.3 |
| 8 | 12.2 | 12.3 | 12.5 | ..... | 12.8 | 12.8 | 13.2 | 13.5 | 13.2 | 13.0 | 12.7 | 12.2 |
| 9 | 12.2 | 12.3 | 12.6 | ..... | 12.8 | 12.8 | 13.2 | 13.5 | 13.3 | 13.0 | 12.7 | 12.3 |
| 10 | 12.2 | 12.4 | 12.6 | ..... | 12.8 | 12.8 | 13.3 | 13.5 | 13.3 | 13.0 | 12.6 | 12.3 |
| 11 | 12.2 | 12.4 | 12.6 | ..... | 12.8 | 12.8 | 13.2 | 13.5 | 13.2 | 13.0 | 12.6 | 12.2 |
| 12 | 12.2 | 12.4 | 12.6 | 12.9 | 12.9 | 12.8 | 13.0 | 13.5 | 13.2 | 12.9 | 12.6 | 12.3 |
| 13 | 12.2 | 12.4 | 12.6 | 12.9 | 12.9 | 12.9 | 13.3 | 13.5 | 13.2 | 12.9 | 12.5 | 12.2 |
| 14 | 12.2 | 12.4 | 12.7 | 12.9 | 13.0 | 12.9 | 13.4 | 13.5 | 13.2 | 12.8 | 12.5 | 12.2 |
| 15 | 12.1 | 12.4 | 12.6 | 12.8 | 13.0 | 12.9 | 13.4 | 13.5 | 13.2 | 12.9 | 12.6 | 12.2 |
| 16 | 12.1 | 12.4 | 12.6 | 12.8 | 13.0 | 12.9 | 13.4 | 13.5 | 13.2 | 12.8 | 12.6 | 12.2 |
| 17 | 12.1 | 12.4 | 12.6 | 12.8 | 12.8 | 12.9 | 13.5 | 13.4 | 13.2 | 12.8 | 12.5 | 12.3 |
| 18 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 12.9 | 13.5 | 13.5 | 13.2 | 12.8 | 12.6 | 12.3 |
| 19 | 12.1 | 12.5 | 12.7 | 12.8 | 12.8 | 12.8 | 13.6 | 13.5 | 13.1 | 12.8 | 12.6 | 12.2 |
| 20 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 12.9 | 13.5 | 13.5 | 13.2 | 12.8 | 12.5 | 12.2 |
| 21 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 13.0 | 13.6 | 13.5 | 13.1 | 12.8 | 12.5 | 12.2 |
| 22 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 12.9 | 13.6 | 13.5 | 13.0 | 12.7 | 12.5 | 12.2 |
| 23 | 12.3 | 12.4 | 12.7 | ..... | 12.8 | 12.9 | 13.6 | 13.4 | 13.0 | 12.7 | 12.4 | 12.2 |
| 24 | 12.2 | 12.5 | 12.7 | ..... | 12.8 | 12.9 | 13.7 | 13.7 | 13.0 | 12.8 | 12.5 | 12.2 |
| 25 | 12.2 | 12.5 | 12.7 | ..... | 12.8 | 13.0 | 13.7 | 13.4 | 13.1 | 12.9 | 12.4 | 12.2 |
| 26 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 13.0 | 13.6 | 13.5 | 13.1 | 12.9 | 12.5 | 12.2 |
| 27 | 12.2 | 12.5 | 12.7 | 12.8 | 12.8 | 13.0 | 13.6 | 13.4 | 13.1 | 12.9 | 12.4 | 12.2 |
| 28 | 12.1 | 12.5 | 12.7 | 12.8 | 12.8 | 12.9 | 13.6 | 13.4 | 13.1 | 12.9 | 12.5 | 12.2 |
| 29 | 12.1 | 12.5 | 12.7 | 12.8 | ..... | 12.9 | 13.6 | 13.4 | 13.2 | 12.9 | 12.5 | 12.2 |
| 30 | 12.2 | 12.5 | 12.6 | 12.8 | ..... | 13.0 | 13.6 | 13.4 | 13.1 | 12.9 | 12.5 | 12.2 |
| 31 | 12.2 | ..... | 12.7 | 12.8 | ..... | 13.0 | ..... | 13.4 | ..... | 12.9 | 12.4 | ..... |

| Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913. | | | | 1913. | | | | 1913. | | | |
| 1 | 12.2 | 12.3 | 12.5 | 11 | 12.2 | 12.4 | 12.6 | 21 | 12.2 | 12.4 | 12.6 |
| 2 | 12.2 | 12.3 | 12.6 | 12 | 12.2 | 12.4 | 12.6 | 22 | 12.2 | 12.4 | 12.6 |
| 3 | 12.2 | 12.3 | 12.5 | 13 | 12.2 | 12.4 | 12.6 | 23 | 12.2 | 12.4 | 12.6 |
| 4 | 12.2 | 12.3 | 12.5 | 14 | 12.2 | 12.4 | 12.6 | 24 | 12.2 | 12.5 | 12.6 |
| 5 | 12.2 | 12.4 | 12.6 | 15 | 12.2 | 12.4 | 12.6 | 25 | 12.2 | 12.5 | 12.6 |
| 6 | 12.2 | 12.4 | 12.5 | 16 | 12.2 | 12.4 | 12.6 | 26 | 12.2 | 12.5 | 12.7 |
| 7 | 12.2 | 12.4 | 12.5 | 17 | 12.2 | 12.4 | 12.6 | 27 | 12.2 | 12.5 | 12.7 |
| 8 | 12.1 | 12.4 | 12.5 | 18 | 12.2 | 12.4 | 12.6 | 28 | 12.3 | 12.5 | 12.7 |
| 9 | 12.2 | 12.4 | 12.6 | 19 | 12.2 | 12.4 | 12.6 | 29 | 12.3 | 12.4 | 12.7 |
| 10 | 12.2 | 12.3 | 12.6 | 20 | 12.2 | 12.4 | 12.6 | 30 | 12.3 | 12.5 | 12.7 |
| | | | | | | | | 31 | 12.3 | ..... | 12.9 |

NOTE.—Ice formed around gage so that it could not be read Jan. 6–11 and 23–25, but river probably not frozen over.

*Daily discharge, in second-feet, of Klamath River at Keno, Oreg., for the period Oct. 1, 1912, to Dec. 31, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 1,160 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,360 | 3,660 | 2,870 | 2,520 | 2,050 | 1,510 |
| 2 | 1,160 | 1,270 | 1,510 | 1,900 | 2,050 | 2,050 | 2,360 | 3,660 | 2,870 | 2,520 | 2,050 | 1,510 |
| 3 | 1,160 | 1,270 | 1,510 | 1,900 | 2,050 | 2,050 | 2,520 | 3,450 | 2,870 | 2,360 | 2,050 | 1,510 |
| 4 | 1,270 | 1,270 | 1,760 | 1,900 | 2,050 | 2,050 | 2,520 | 3,450 | 2,870 | 2,360 | 2,050 | 1,390 |
| 5 | 1,390 | 1,270 | 1,760 | 1,900 | 2,050 | 2,050 | 2,520 | 3,450 | 2,690 | 2,520 | 2,050 | 1,390 |
| 6 | 1,270 | 1,270 | 1,760 | 1,900 | 2,050 | 2,050 | 2,690 | 3,450 | 2,690 | 2,360 | 2,050 | 1,390 |
| 7 | 1,270 | 1,390 | 1,630 | 2,000 | 2,050 | 2,050 | 2,690 | 3,450 | 2,690 | 2,360 | 2,050 | 1,390 |
| 8 | 1,270 | 1,390 | 1,630 | 2,000 | 2,050 | 2,050 | 2,690 | 3,250 | 2,690 | 2,360 | 1,900 | 1,270 |
| 9 | 1,270 | 1,390 | 1,760 | 2,100 | 2,050 | 2,050 | 2,690 | 3,250 | 2,870 | 2,360 | 1,900 | 1,390 |
| 10 | 1,270 | 1,510 | 1,760 | 2,100 | 2,050 | 2,050 | 2,870 | 3,250 | 2,870 | 2,360 | 1,760 | 1,390 |
| 11 | 1,270 | 1,510 | 1,760 | 2,200 | 2,050 | 2,050 | 2,690 | 3,250 | 2,690 | 2,360 | 1,760 | 1,270 |
| 12 | 1,270 | 1,510 | 1,760 | 2,200 | 2,200 | 2,050 | 2,360 | 3,250 | 2,690 | 2,200 | 1,760 | 1,390 |
| 13 | 1,270 | 1,510 | 1,760 | 2,200 | 2,200 | 2,200 | 2,870 | 3,250 | 2,690 | 2,200 | 1,630 | 1,270 |
| 14 | 1,270 | 1,510 | 1,900 | 2,200 | 2,360 | 2,200 | 3,060 | 3,250 | 2,690 | 2,050 | 1,630 | 1,270 |
| 15 | 1,160 | 1,510 | 1,760 | 2,050 | 2,360 | 2,200 | 3,060 | 3,250 | 2,690 | 2,200 | 1,760 | 1,270 |
| 16 | 1,160 | 1,510 | 1,760 | 2,050 | 2,360 | 2,200 | 3,060 | 3,250 | 2,690 | 2,050 | 1,760 | 1,270 |
| 17 | 1,160 | 1,510 | 1,760 | 2,050 | 2,050 | 2,200 | 3,250 | 3,060 | 2,690 | 2,050 | 1,630 | 1,390 |
| 18 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,200 | 3,250 | 3,250 | 2,690 | 2,050 | 1,760 | 1,390 |
| 19 | 1,160 | 1,630 | 1,900 | 2,050 | 2,050 | 2,050 | 3,450 | 3,250 | 2,520 | 2,050 | 1,760 | 1,270 |
| 20 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,200 | 3,250 | 3,250 | 2,690 | 2,050 | 1,630 | 1,270 |
| 21 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,360 | 3,450 | 3,250 | 2,520 | 2,050 | 1,630 | 1,270 |
| 22 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,200 | 3,450 | 3,250 | 2,360 | 1,900 | 1,630 | 1,270 |
| 23 | 1,390 | 1,510 | 1,900 | 2,050 | 2,050 | 2,200 | 3,450 | 3,060 | 2,360 | 1,900 | 1,510 | 1,270 |
| 24 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,200 | 3,660 | 3,660 | 2,360 | 2,050 | 1,630 | 1,270 |
| 25 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,360 | 3,660 | 3,060 | 2,520 | 2,200 | 1,510 | 1,270 |
| 26 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,360 | 3,450 | 3,250 | 2,520 | 2,200 | 1,630 | 1,270 |
| 27 | 1,270 | 1,630 | 1,900 | 2,050 | 2,050 | 2,360 | 3,450 | 3,060 | 2,520 | 2,200 | 1,510 | 1,270 |
| 28 | 1,160 | 1,630 | 1,900 | 2,050 | 2,050 | 2,200 | 3,450 | 3,060 | 2,520 | 2,200 | 1,630 | 1,270 |
| 29 | 1,160 | 1,630 | 1,900 | 2,050 | ..... | 2,200 | 3,450 | 3,060 | 2,690 | 2,200 | 1,630 | 1,270 |
| 30 | 1,270 | 1,630 | 1,760 | 2,050 | ..... | 2,360 | 3,450 | 3,060 | 2,520 | 2,200 | 1,630 | 1,270 |
| 31 | 1,270 | ..... | 1,900 | 2,050 | ..... | 2,360 | ..... | 3,060 | ..... | 2,200 | 1,510 | ..... |

| Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. | Day. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913. | | | | 1913. | | | | 1913. | | | |
| 1 | 1,270 | 1,390 | 1,630 | 11 | 1,270 | 1,510 | 1,760 | 21 | 1,270 | 1,510 | 1,760 |
| 2 | 1,270 | 1,390 | 1,760 | 12 | 1,270 | 1,510 | 1,760 | 22 | 1,270 | 1,510 | 1,760 |
| 3 | 1,270 | 1,390 | 1,630 | 13 | 1,270 | 1,510 | 1,760 | 23 | 1,270 | 1,510 | 1,760 |
| 4 | 1,270 | 1,390 | 1,630 | 14 | 1,270 | 1,510 | 1,760 | 24 | 1,270 | 1,630 | 1,760 |
| 5 | 1,270 | 1,510 | 1,760 | 15 | 1,270 | 1,510 | 1,760 | 25 | 1,270 | 1,630 | 1,760 |
| 6 | 1,270 | 1,510 | 1,630 | 16 | 1,270 | 1,510 | 1,760 | 26 | 1,270 | 1,630 | 1,900 |
| 7 | 1,270 | 1,510 | 1,630 | 17 | 1,270 | 1,510 | 1,760 | 27 | 1,270 | 1,630 | 1,900 |
| 8 | 1,160 | 1,510 | 1,630 | 18 | 1,270 | 1,510 | 1,760 | 28 | 1,390 | 1,630 | 1,900 |
| 9 | 1,270 | 1,510 | 1,760 | 19 | 1,270 | 1,510 | 1,760 | 29 | 1,390 | 1,510 | 1,900 |
| 10 | 1,270 | 1,390 | 1,760 | 20 | 1,270 | 1,510 | 1,760 | 30 | 1,390 | 1,630 | 1,900 |
| | | | | | | | | 31 | 1,390 | ..... | 2,200 |

NOTE.—Discharge determined from fairly well defined rating curve, except Jan. 6–11 and 23–25, when it was interpolated.

*Monthly discharge of Klamath River at Keno, Oreg., for the period Oct. 1, 1912, to Dec. 31, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912–13. | | | | | |
| October | 1,390 | 1,160 | 1,250 | 76,900 | B. |
| November | 1,630 | 1,270 | 1,500 | 89,300 | B. |
| December | 1,900 | 1,510 | 1,790 | 110,000 | B. |
| January | 2,200 | 1,900 | 2,040 | 125,000 | B. |
| February | 2,360 | 2,050 | 2,090 | 116,000 | B. |
| March | 2,360 | 2,050 | 2,170 | 133,000 | B. |
| April | 3,660 | 2,360 | 3,040 | 181,000 | B. |
| May | 3,660 | 3,060 | 3,270 | 201,000 | B. |
| June | 2,870 | 2,360 | 2,650 | 158,000 | B. |
| July | 2,520 | 1,900 | 2,210 | 136,000 | B. |
| August | 2,050 | 1,510 | 1,760 | 108,000 | B. |
| September | 1,510 | 1,270 | 1,330 | 79,100 | B. |
| The year | 3,660 | 1,160 | 2,090 | 1,510,000 | |
| 1913. | | | | | |
| October | 1,390 | 1,160 | 1,280 | 78,700 | B. |
| November | 1,630 | 1,390 | 1,510 | 89,800 | B. |
| December | 2,200 | 1,630 | 1,770 | 109,000 | B. |
| The period | ..... | ..... | ..... | 278,000 | |

## KLAMATH RIVER NEAR SEIAD VALLEY, CAL.

LOCATION.—In the NE. ¼ sec. 13, T. 46 N., R. 12 W., above highway bridge, 300 feet above mouth of Walker Creek, about 11½ miles below mouth of Scott River, and 1¼ miles southeast of Seiad Valley.

RECORDS AVAILABLE.—November 23, 1912, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in five sections, fastened to trees on left bank one-fourth mile above highway bridge.

CHANNEL.—Gravel and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable installed June 21, 1913, 35 feet below gage. Prior to that date, from bridge.

DIVERSIONS.—Water is diverted from main river and tributaries above the station for use in irrigation, placer mining, and power development.

ACCURACY.—Rating curve well defined; results, good.

*Discharge measurements of Klamath River near Seiad Valley, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 23 | Lasley Lee | 4.68 | 2,800 | May 11 | G. H. Canfield | 7.09 | 8,260 |
| Feb. 16 | G. H. Canfield | 5.65 | 4,950 | June 23 | do | 5.58 | 4,770 |
| 18 | do | 5.90 | 5,440 | Sept. 5 | Lasley Lee | 4.17 | 2,380 |
| Apr. 3 | do | 6.37 | 6,400 | | | | |

*Daily gage height, in feet, of Klamath River near Seiad Valley, Cal., for the year ending Sept. 30, 1913.*

[M. J. Brickley, observer.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 4.6 | 5.3 | 5.1 | 5.1 | 6.7 | 6.8 | 6.7 | 5.4 | 4.9 | 4.0 |
| 2 | ..... | 4.4 | 5.1 | 5.2 | 5.1 | 6.7 | 6.7 | 6.8 | 5.4 | 4.9 | 4.1 |
| 3 | ..... | 4.6 | 5.0 | 5.2 | 5.2 | 6.5 | 6.6 | 6.9 | 5.4 | 4.8 | 4.3 |
| 4 | ..... | 4.6 | 5.0 | 5.2 | 5.4 | 6.3 | 6.5 | 7.0 | 5.4 | 5.8 | 4.2 |
| 5 | ..... | 4.6 | 4.9 | 5.2 | 5.4 | 6.5 | 6.6 | 6.8 | 5.3 | 4.8 | 4.1 |
| 6 | ..... | 4.6 | 4.8 | 5.3 | 5.8 | 6.7 | 6.7 | 6.6 | 5.3 | 4.7 | 4.1 |
| 7 | ..... | 4.6 | 4.8 | 5.3 | 6.0 | 6.5 | 7.0 | 6.5 | 5.3 | 4.7 | 4.1 |
| 8 | ..... | 4.6 | 5.0 | 5.3 | 6.1 | 6.4 | 7.2 | 6.5 | 5.1 | 4.6 | 4.1 |
| 9 | ..... | 4.6 | 4.9 | 5.3 | 6.2 | 6.5 | 7.2 | 6.5 | 5.1 | 4.5 | 4.1 |
| 10 | ..... | 4.5 | 4.8 | 5.3 | 6.4 | 6.5 | 7.3 | 6.5 | 5.0 | 4.5 | 4.1 |
| 11 | ..... | 4.6 | 4.8 | 5.4 | 6.5 | 6.7 | 7.1 | 6.3 | 5.0 | 4.5 | 4.1 |
| 12 | ..... | 4.6 | 4.8 | 5.4 | 6.2 | 6.9 | 7.0 | 6.1 | 5.0 | 4.5 | 4.1 |
| 13 | ..... | 4.6 | 5.0 | 5.4 | 5.9 | 7.1 | 6.9 | 6.1 | 4.9 | 4.5 | 4.0 |
| 14 | ..... | 4.8 | 5.0 | 5.4 | 5.8 | 7.2 | 6.9 | 5.9 | 4.9 | 4.4 | 4.0 |
| 15 | ..... | 5.1 | 5.3 | 5.5 | 5.8 | 7.1 | 6.7 | 5.8 | 4.9 | 4.4 | 4.0 |
| 16 | ..... | 5.2 | 5.3 | 5.7 | 5.7 | 7.0 | 6.8 | 5.7 | 4.9 | 4.4 | 4.0 |
| 17 | ..... | 5.4 | 5.1 | 6.0 | 5.7 | 6.9 | 6.8 | 5.7 | 4.9 | 4.4 | 4.0 |
| 18 | ..... | 5.4 | 5.9 | 5.9 | 5.9 | 6.9 | 6.9 | 5.6 | 4.9 | 4.4 | 4.0 |
| 19 | ..... | 5.2 | 5.9 | 5.7 | 5.9 | 7.3 | 7.0 | 5.6 | 4.8 | 4.4 | 4.0 |
| 20 | ..... | 5.1 | 5.6 | 5.5 | 5.7 | 7.1 | 7.0 | 5.6 | 4.8 | 4.4 | 4.0 |
| 21 | ..... | 5.0 | 5.4 | 5.5 | 5.7 | 7 2 | 6.9 | 5.5 | 4.8 | 4.4 | 4.0 |
| 22 | ..... | 4.9 | 5.4 | 5.4 | 5.6 | 7.2 | 6.9 | 5.6 | 4.8 | 4.3 | 4.0 |
| 23 | 4.7 | 4.9 | 5.2 | 5.4 | 5.6 | 7.2 | 7.1 | 5.6 | 5.0 | 4.3 | 4.0 |
| 24 | 4.7 | 4.9 | 5.2 | 5.3 | 5.5 | 7.1 | 7.2 | 5.5 | 5.6 | 4.3 | 4.0 |
| 25 | 4.6 | 4.9 | 5.2 | 5.2 | 5.5 | 7.2 | 7.2 | 5.6 | 5.9 | 4.3 | 4.0 |
| 26 | 4.6 | 4.8 | 5.2 | 5.2 | 5.6 | 7.5 | 7.2 | 5.6 | 5.3 | 4.3 | 4.0 |
| 27 | 4.6 | 4.8 | 5.1 | 5.1 | 5.7 | 7.5 | 7.3 | 5.8 | 5.2 | 4.2 | 4.0 |
| 28 | 4.6 | 4.8 | 5.1 | 5.1 | 5.7 | 7.3 | 7.0 | 5.9 | 5.1 | 4.0 | 4.0 |
| 29 | 4.6 | 4.8 | 5.1 | ..... | 5.7 | 7.2 | 6.8 | 5.7 | 5.0 | 4.0 | 4.0 |
| 30 | 4.6 | 5.0 | 5.1 | ..... | 6.3 | 6.9 | 6.8 | 5.5 | 5.0 | 4.0 | 4.0 |
| 31 | ..... | 5.2 | 5.1 | ..... | 6.6 | ..... | 6.7 | ..... | 5.0 | 4.0 | ..... |

*Daily discharge, in second-feet, of Klamath River near Seiad Valley, Cal., for the year ending Sept. 30, 1913.*

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 2,670 | 3,850 | 3,880 | 3,880 | 7,230 | 7,460 | 7,230 | 4,440 | 3,520 | 2,150 |
| 2 | ..... | 2,380 | 3,490 | 4,060 | 3,880 | 7,230 | 7,230 | 7,460 | 4,440 | 3,520 | 2,280 |
| 3 | ..... | 2,670 | 3,320 | 4,060 | 4,060 | 6,770 | 7,000 | 7,700 | 4,440 | 3,350 | 2,550 |
| 4 | ..... | 2,670 | 3,320 | 4,060 | 4,440 | 6,320 | 6,770 | 7,940 | 4,440 | 3,350 | 2,410 |
| 5 | ..... | 2,670 | 3,150 | 4,060 | 4,440 | 6,770 | 7,000 | 7,460 | 4,250 | 3,350 | 2,280 |
| 6 | ..... | 2,670 | 2,990 | 4,250 | 5,230 | 7,230 | 7,230 | 7,000 | 4,250 | 3,180 | 2,280 |
| 8 | ..... | 2,670 | 2,990 | 4,250 | 5,660 | 6,770 | 7,940 | 6,770 | 4,250 | 3,180 | 2,280 |
| 8 | ..... | 2,670 | 3,320 | 4,250 | 5,880 | 6,540 | 8,440 | 6,770 | 3,880 | 3,020 | 2,280 |
| 9 | ..... | 2,670 | 3,150 | 4,250 | 6,100 | 6,770 | 8,440 | 6,770 | 3,880 | 2,860 | 2,280 |
| 10 | ..... | 2,520 | 2,990 | 4,250 | 6,540 | 6,770 | 8,690 | 6,770 | 3,700 | 2,860 | 2,280 |
| 11 | ..... | 2,670 | 2,990 | 4,440 | 6,770 | 7,230 | 8,190 | 6,320 | 3,700 | 2,860 | 2,280 |
| 12 | ..... | 2,670 | 2,990 | 4,440 | 6,100 | 7,700 | 7,940 | 5,880 | 3,700 | 2,860 | 2,280 |
| 13 | ..... | 2,670 | 3,320 | 4,440 | 5,440 | 8,190 | 7,700 | 5,880 | 3,520 | 2,860 | 2,150 |
| 14 | ..... | 2,990 | 3,320 | 4,440 | 5,230 | 8,440 | 7,700 | 5,440 | 3,520 | 2,700 | 2,150 |
| 15 | ..... | 3,490 | 3,850 | 4,630 | 5,230 | 8,190 | 7,230 | 5,230 | 3,520 | 2,700 | 2,150 |
| 16 | ..... | 3,670 | 3,850 | 5,030 | 5,030 | 7,940 | 7,460 | 5,030 | 3,520 | 2,700 | 2,150 |
| 17 | ..... | 4,030 | 3,490 | 5,660 | 5,030 | 7,700 | 7,460 | 5,030 | 3,520 | 2,700 | 2,150 |
| 18 | ..... | 4,030 | 4,990 | 5,440 | 5,440 | 7,700 | 7,700 | 4,830 | 3,520 | 2,700 | 2,150 |
| 19 | ..... | 3,670 | 5,440 | 5,030 | 5,440 | 8,690 | 7,940 | 4,830 | 3,350 | 2,700 | 2,150 |
| 20 | ..... | 3,490 | 4,830 | 4,630 | 5,030 | 8,190 | 7,940 | 4,830 | 3,350 | 2,700 | 2,150 |
| 21 | ..... | 3,320 | 4,440 | 4,630 | 5,030 | 8,440 | 7,700 | 4,630 | 3,350 | 2,700 | 2,150 |
| 22 | ..... | 3,150 | 4,440 | 4,440 | 4,830 | 8,440 | 7,700 | 4,830 | 3,350 | 2,550 | 2,150 |
| 23 | 2,830 | 3,150 | 4,060 | 4,440 | 4,830 | 8,440 | 8,190 | 4,830 | 3,700 | 2,550 | 2,150 |
| 24 | 2,830 | 3,150 | 4,060 | 4,250 | 4,630 | 8,190 | 8,440 | 4,630 | 4,830 | 2,550 | 2,150 |
| 25 | 2,670 | 3,150 | 4,060 | 4,060 | 4,630 | 8,440 | 8,440 | 4,830 | 5,440 | 2,550 | 2,150 |
| 26 | 2,670 | 2,990 | 4,060 | 4,060 | 4,830 | 9,190 | 8,440 | 4,830 | 4,250 | 2,550 | 2,150 |
| 27 | 2,670 | 2,990 | 3,880 | 3,880 | 5,030 | 9,190 | 8,690 | 5,230 | 4,060 | 2,410 | 2,150 |
| 28 | 2,670 | 2,990 | 3,880 | 3,880 | 5,030 | 8,690 | 7,940 | 5,440 | 3,880 | 2,150 | 2,150 |
| 29 | 2,670 | 2,990 | 3,880 | ..... | 5,030 | 8,440 | 7,460 | 5,030 | 3,700 | 2,150 | 2,150 |
| 30 | 2,670 | 3,320 | 3,880 | ..... | 6,320 | 7,700 | 7,460 | 4,630 | 3,700 | 2,150 | 2,150 |
| 31 | ..... | 3,670 | 3,880 | ..... | 7,000 | ..... | 7,230 | ..... | 3,700 | 2,150 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Nov. 23, 1912, to Jan. 18, 1913, fairly well defined; Jan. 19 to Sept. 30, 1913, well defined.

*Monthly discharge of Klamath River near Seiad Valley, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| Nov. 23-30 | 2,830 | 2,670 | 2,710 | 43,000 | B. |
| December | 4,030 | 2,380 | 3,050 | 188,000 | B. |
| January | 5,440 | 2,990 | 3,750 | 231,000 | B. |
| February | 5,660 | 3,880 | 4,400 | 244,000 | A. |
| March | 7,000 | 3,880 | 5,230 | 322,000 | A. |
| April | 9,190 | 6,320 | 7,780 | 463,000 | A. |
| May | 8,690 | 6,770 | 7,780 | 478,000 | A. |
| June | 7,940 | 4,630 | 5,800 | 345,000 | A. |
| July | 5,440 | 3,350 | 3,910 | 240,000 | B. |
| August | 3,520 | 2,150 | 2,780 | 171,000 | B. |
| September | 2,550 | 2,150 | 2,210 | 132,000 | B. |
| The period | ..... | ..... | ..... | 2,850,000 | |

## KLAMATH RIVER NEAR REQUA, CAL.

LOCATION.—In Sec. 29, T. 13 N., R. 2 E., at Scofield Ferry, 30 miles below mouth of Trinity River, and about 9 miles above Requa and the mouth of the river.

RECORDS AVAILABLE.—December 25, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in four sections on right bank at ferry cable.

CHANNEL.—Gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from car on ferry cable.

DIVERSIONS.—Water is diverted for irrigation, placer mining, and power development from main river and tributaries in Oregon and California.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Klamath River near Requa, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Nov. 7 | 15.61 | 43,600 | April 3 | 13.40 | 30,400 | Sept. 18 | 6.25 | 3,510 |
| 8 | 13.07 | 28,700 | June 1 | 12.40 | 25,400 | 18 | 6.25 | 3,380 |
| Feb. 20 | 12.19 | 23,600 | | | | | | |

*Daily gage height, in feet, of Klamath River near Requa, Cal., for the year ending Sept. 30, 1913.*

[M. F. Scofield and C. E. Beth, observers.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.4 | 7.3 | 9.0 | 13.5 | 11.8 | 10.7 | 14.2 | 12.1 | 12.5 | 9.1 | 7.7 | 6.6 |
| 2 | 6.4 | 6.9 | 8.9 | 12.7 | 12.2 | 10.2 | 13.9 | 12.0 | 12.6 | 9.1 | 7.6 | 6.5 |
| 3 | 6.4 | 6.4 | 8.8 | 12.1 | 12.0 | 10.3 | 13.6 | 11.9 | 12.7 | 9.2 | 7.6 | 6.8 |
| 4 | 6.4 | 6.5 | 8.8 | 11.7 | 11.8 | 10.4 | 13.2 | 11.8 | 12.4 | 9.2 | 7.6 | 7.2 |
| 5 | 6.4 | 10.1 | 8.7 | 11.4 | 11.8 | 10.9 | 15.6 | 12.2 | 12.1 | 9.2 | 7.4 | 7.3 |
| 6 | 6.4 | 19.0 | 8.6 | 11.2 | 11.8 | 11.0 | 14.8 | 13.1 | 11.8 | 9.0 | 7.3 | 7.5 |
| 7 | 6.4 | 16.3 | 8.6 | 11.1 | 11.8 | 11.2 | 14.6 | 13.4 | 11.6 | 8.8 | 7.2 | 7.6 |
| 8 | 6.4 | 13.0 | 8.5 | 11.2 | 11.8 | 11.7 | 14.1 | 13.8 | 11.4 | 8.6 | 7.1 | 7.6 |
| 9 | 6.4 | 13.2 | 8.4 | 11.1 | 11.9 | 11.9 | 13.8 | 14.0 | 11.2 | 8.5 | 7.0 | 7.5 |
| 10 | 6.4 | 14.8 | 8.4 | 10.8 | 12.0 | 12.0 | 13.6 | 14.0 | 10.9 | 8.4 | 7.0 | 7.4 |
| 11 | 6.4 | 14.2 | 8.4 | 11.0 | 12.1 | 12.4 | 13.9 | 13.6 | 10.7 | 8.3 | 7.0 | 7.4 |
| 12 | 6.4 | 13.1 | 8.3 | 11.2 | 12.1 | 11.9 | 14.9 | 13.2 | 10.4 | 8.2 | 7.0 | 7.2 |
| 13 | 6.4 | 13.8 | 9.1 | 13.4 | 12.1 | 11.8 | 14.4 | 12.8 | 10.2 | 8.1 | 6.9 | 7.0 |
| 14 | 6.4 | 14.7 | 11.2 | 14.3 | 12.0 | 11.7 | 14.9 | 12.5 | 10.0 | 8.0 | 6.9 | 6.8 |
| 15 | 6.4 | 14.1 | 14.2 | 14.1 | 12.0 | 11.6 | 13.8 | 12.5 | 9.8 | 7.9 | 6.9 | 6.5 |
| 16 | 6.4 | 13.2 | 16.2 | 13.8 | 12.7 | 11.6 | 13.5 | 12.6 | 9.7 | 7.8 | 6.9 | 6.3 |
| 17 | 6.4 | 12.4 | 15.9 | 13.8 | 12.9 | 11.6 | 13.3 | 12.8 | 9.6 | 7.8 | 6.8 | 6.3 |
| 18 | 6.4 | 11.3 | 15.2 | 16.7 | 13.1 | 11.5 | 13.0 | 12.9 | 9.7 | 7.7 | 6.8 | 6.2 |
| 19 | 6.4 | 11.4 | 14.6 | 16.3 | 12.7 | 11.5 | 13.0 | 13.0 | 9.9 | 7.6 | 6.8 | 6.2 |
| 20 | 6.4 | 10.9 | 13.7 | 14.7 | 12.1 | 11.5 | 12.9 | 13.2 | 9.7 | 7.6 | 6.8 | 6.2 |
| 21 | 6.5 | 10.5 | 13.1 | 13.6 | 11.9 | 11.7 | 12.9 | 13.5 | 9.4 | 7.6 | 6.7 | 6.2 |
| 22 | 6.9 | 10.0 | 12.5 | 13.1 | 11.5 | 11.9 | 12.9 | 13.7 | 9.8 | 7.7 | 6.7 | 6.2 |
| 23 | 7.8 | 9.9 | 11.5 | 13.0 | 11.3 | 12.1 | 13.1 | 13.9 | 9.9 | 7.9 | 6.6 | 6.2 |
| 24 | 7.4 | 9.8 | 11.2 | 12.8 | 10.8 | 11.6 | 13.4 | 13.6 | 9.8 | 8.0 | 6.6 | 6.1 |
| 25 | 7.6 | 9.7 | 10.9 | 12.8 | 10.5 | 11.2 | 14.2 | 13.4 | 9.5 | 8.2 | 6.6 | 6.1 |
| 26 | 7.7 | 9.6 | 10.6 | 12.0 | 10.3 | 10.7 | 14.0 | 13.2 | 9.3 | 8.3 | 6.6 | 6.1 |
| 27 | 7.4 | 9.6 | 10.4 | 11.5 | 10.4 | 10.4 | 13.9 | 13.0 | 9.6 | 8.1 | 6.6 | 6.1 |
| 28 | 7.4 | 9.3 | 10.4 | 11.5 | 10.5 | 11.7 | 13.4 | 12.8 | 9.7 | 8.0 | 6.6 | 6.2 |
| 29 | 7.8 | 9.2 | 10.4 | 11.4 | ..... | 12.8 | 13.0 | 12.6 | 9.4 | 7.9 | 6.0 | 6.2 |
| 30 | 7.6 | 9.0 | 14.1 | 11.4 | ..... | 13.5 | 12.5 | 12.5 | 9.3 | 7.8 | 6.6 | 6.2 |
| 31 | 7.4 | ..... | 14.6 | 11.5 | ..... | 14.0 | ..... | 12.4 | ..... | 7.8 | 6.6 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 20.1 feet at 5.30 p. m.; Jan. 18, 1913, 17.2 feet at 4.30 p. m. Accuracy of gage height doubtful Aug. 29, 1913.

*Daily discharge, in second-feet, of Klamath River near Requa, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | ..... | 8,500 | 42,100 | 13,600 | 39,700 | 23,900 | 27,900 | 9,400 | 3,540 | 2,500 |
| 2 | ..... | 8,500 | 36,700 | 13,200 | 38,500 | 25,400 | 26,800 | 9,400 | 3,540 | 2,500 |
| 3 | ..... | 8,200 | 36,100 | 13,200 | 36,700 | 26,400 | 25,400 | 9,100 | 3,380 | 2,500 |
| 4 | ..... | 8,200 | 34,900 | 14,400 | 34,900 | 25,800 | 23,400 | 9,100 | 3,380 | 2,500 |
| 5 | ..... | 7,900 | 31,900 | 19,800 | 40,300 | 28,400 | 22,600 | 9,100 | 3,380 | 2,500 |
| 6 | ..... | 7,900 | 29,000 | 23,000 | 40,900 | 27,400 | 22,600 | 9,100 | 3,240 | 2,500 |
| 7 | ..... | 7,900 | 27,400 | 37,300 | 34,300 | 24,800 | 21,600 | 8,800 | 3,190 | 2,500 |
| 8 | ..... | 7,600 | 23,900 | 38,500 | 33,400 | 24,800 | 21,200 | 7,900 | 3,150 | 2,500 |
| 9 | ..... | 7,900 | 22,600 | 30,100 | 32,500 | 23,900 | 20,800 | 7,600 | 3,100 | 2,580 |
| 10 | ..... | 8,800 | 22,100 | 27,400 | 33,700 | 22,600 | 20,800 | 7,040 | 3,100 | 2,500 |
| 11 | ..... | 10,700 | 24,400 | 24,400 | 33,100 | 21,600 | 22,100 | 6,760 | 3,100 | 2,500 |
| 12 | ..... | 10,400 | 23,900 | 23,000 | 30,100 | 22,100 | 22,100 | 6,760 | 2,980 | 2,500 |
| 13 | ..... | 9,400 | 25,400 | 22,600 | 25,800 | 22,100 | 22,100 | 6,760 | 2,980 | 2,580 |
| 14 | ..... | 9,400 | 23,400 | 22,600 | 25,800 | 21,200 | 22,100 | 6,760 | 2,980 | 2,580 |
| 15 | ..... | 9,100 | 21,600 | 23,000 | 25,400 | 21,500 | 21,600 | 7,040 | 2,860 | 2,580 |
| 16 | ..... | 9,100 | 19,800 | 23,900 | 25,400 | 21,800 | 19,400 | 6,760 | 2,860 | 2,500 |
| 17 | ..... | 9,400 | 19,400 | 25,400 | 25,800 | 22,100 | 18,000 | 6,480 | 2,860 | 2,500 |
| 18 | ..... | 13,600 | 20,300 | 27,400 | 25,800 | 34,300 | 16,800 | 6,200 | 2,860 | 2,500 |
| 19 | ..... | 34,300 | 19,400 | 28,400 | 25,400 | 30,700 | 16,000 | 5,940 | 2,760 | 2,500 |
| 20 | ..... | 64,600 | 18,500 | 29,000 | 24,800 | 27,400 | 15,600 | 5,420 | 2,760 | 2,500 |
| 21 | ..... | 40,300 | 18,000 | 30,700 | 24,400 | 26,400 | 14,800 | 5,180 | 2,660 | 2,500 |
| 22 | ..... | 31,300 | 17,200 | 33,700 | 25,400 | 27,900 | 14,000 | 4,940 | 2,660 | 2,500 |
| 23 | ..... | 25,400 | 17,200 | 36,100 | 26,400 | 29,600 | 12,800 | 4,720 | 2,660 | 2,440 |
| 24 | ..... | 21,200 | 16,400 | 36,100 | 29,600 | 33,700 | 12,400 | 4,500 | 2,660 | 2,440 |
| 25 | 10,000 | 21,200 | 16,000 | 33,100 | 31,900 | 25,400 | 11,400 | 4,500 | 2,660 | 2,500 |
| 26 | 9,400 | 21,600 | 14,800 | 30,100 | 31,900 | 23,000 | 11,000 | 4,300 | 2,580 | 2,580 |
| 27 | 9,400 | 21,200 | 14,400 | 27,900 | 30,100 | 22,100 | 11,400 | 4,100 | 2,580 | 2,580 |
| 28 | 8,800 | 23,900 | 14,000 | 27,400 | 27,400 | 22,100 | 11,400 | 4,100 | 2,580 | 2,660 |
| 29 | 8,800 | 25,400 | ..... | 29,000 | 25,400 | 22,600 | 10,700 | 4,100 | 2,580 | 2,580 |
| 30 | 8,800 | 31,300 | ..... | 33,100 | 24,400 | 23,400 | 10,000 | 3,900 | 2,580 | 2,580 |
| 31 | 8,800 | 43,300 | ..... | 37,300 | ..... | 24,800 | ..... | 3,720 | 2,500 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 2,580 | 2,760 | 3,540 | 4,560 | 23,000 | 19,400 | 19,400 | 65,300 | 31,300 | 11,000 | 5,420 | 3,380 |
| 2 | 2,580 | 2,760 | 3,540 | 4,300 | 20,800 | 18,000 | 19,000 | 62,500 | 31,300 | 10,700 | 5,420 | 4,100 |
| 3 | 2,580 | 2,760 | 3,540 | 4,300 | 18,500 | 17,600 | 19,400 | 51,300 | 30,700 | 10,000 | 5,420 | 4,500 |
| 4 | 2,660 | 2,760 | 3,540 | 4,100 | 17,600 | 16,800 | 19,400 | 44,500 | 30,700 | 10,000 | 5,180 | 4,720 |
| 5 | 2,660 | 2,760 | 3,720 | 4,100 | 23,400 | 18,000 | 19,000 | 38,500 | 30,100 | 10,000 | 4,940 | 5,420 |
| 6 | 2,660 | 2,760 | 4,500 | 4,500 | 23,000 | 21,200 | 19,000 | 37,900 | 29,000 | 9,720 | 4,940 | 11,000 |
| 7 | 2,660 | 2,760 | 4,500 | 14,000 | 22,600 | 23,000 | 19,000 | 38,500 | 27,900 | 9,400 | 4,940 | 9,400 |
| 8 | 2,660 | 2,860 | 4,500 | 15,200 | 29,600 | 23,400 | 19,000 | 39,700 | 25,800 | 9,100 | 4,720 | 7,600 |
| 9 | 3,100 | 3,240 | 4,100 | 23,000 | 33,100 | 22,600 | 18,500 | 40,900 | 24,400 | 8,800 | 4,720 | 7,040 |
| 10 | 2,860 | 4,720 | 3,900 | 26,800 | 33,100 | 21,200 | 20,300 | 39,100 | 23,000 | 8,800 | 4,500 | 6,480 |
| 11 | 2,860 | 4,100 | 3,720 | 28,400 | 31,300 | 19,800 | 21,200 | 37,900 | 22,100 | 8,500 | 4,500 | 5,940 |
| 12 | 2,860 | 3,380 | 3,720 | 71,600 | 28,400 | 19,000 | 20,300 | 36,700 | 22,100 | 8,200 | 4,500 | 5,420 |
| 13 | 2,860 | 4,100 | 3,720 | 45,700 | 25,400 | 19,400 | 19,000 | 34,900 | 21,600 | 8,200 | 4,300 | 5,420 |
| 14 | 3,100 | 4,300 | 3,720 | 35,500 | 23,000 | 19,400 | 17,600 | 34,900 | 21,200 | 8,200 | 4,300 | 4,940 |
| 15 | 3,100 | 10,000 | 3,720 | 29,000 | 29,600 | 24,400 | 17,600 | 34,300 | 18,500 | 8,200 | 4,300 | 4,940 |
| 16 | 2,860 | 10,700 | 4,100 | 25,800 | 61,800 | 23,900 | 17,200 | 32,500 | 16,800 | 7,900 | 4,300 | 4,720 |
| 17 | 2,860 | 6,480 | 4,940 | 22,100 | 132,000 | 23,400 | 16,800 | 31,900 | 16,000 | 7,600 | 4,100 | 4,500 |
| 18 | 2,760 | 5,420 | 4,500 | 19,000 | 115,000 | 23,000 | 16,800 | 30,700 | 15,600 | 7,600 | 4,100 | 4,500 |
| 19 | 2,760 | 4,720 | 4,300 | 17,600 | 81,700 | 23,000 | 16,400 | 30,100 | 16,000 | 7,900 | 4,100 | 4,300 |
| 20 | 2,660 | 4,500 | 4,100 | 15,600 | 60,400 | 22,600 | 16,000 | 31,300 | 16,000 | 7,600 | 4,100 | 4,300 |
| 21 | 2,660 | 4,300 | 3,900 | 14,400 | 45,100 | 22,600 | 16,000 | 27,900 | 15,200 | 7,320 | 3,900 | 4,300 |
| 22 | 2,660 | 4,100 | 4,100 | 14,000 | 38,500 | 20,800 | 15,200 | 25,400 | 13,600 | 7,040 | 3,900 | 4,300 |
| 23 | 2,660 | 3,900 | 4,500 | 13,600 | 33,700 | 21,200 | 15,200 | 24,800 | 14,000 | 6,760 | 3,720 | 4,100 |
| 24 | 2,660 | 3,720 | 4,500 | 16,800 | 29,600 | 21,200 | 14,400 | 23,900 | 13,600 | 6,480 | 3,720 | 4,100 |
| 25 | 2,660 | 3,720 | 4,500 | 80,900 | 26,800 | 20,800 | 14,000 | 26,400 | 13,600 | 6,480 | 3,720 | 4,100 |
| 26 | 2,760 | 3,720 | 4,500 | 115,000 | 24,400 | 20,800 | 16,000 | 32,500 | 12,800 | 6,200 | 3,720 | 4,030 |
| 27 | 2,760 | 3,540 | 5,940 | 69,500 | 22,600 | 21,200 | 16,000 | 33,700 | 12,400 | 6,200 | 3,720 | 3,970 |
| 28 | 2,760 | 3,540 | 6,480 | 45,100 | 21,200 | 22,100 | 21,600 | 34,900 | 12,000 | 5,940 | 3,540 | 3,900 |
| 29 | 2,760 | 3,540 | 7,040 | 34,900 | 20,300 | 21,200 | 30,100 | 33,700 | 11,700 | 5,680 | 3,540 | 3,900 |
| 30 | 2,760 | 3,720 | 7,040 | 29,000 | ..... | 20,300 | 42,700 | 32,500 | 11,400 | 5,420 | 3,540 | 3,900 |
| 31 | 2,760 | ..... | 5,420 | 25,800 | ..... | 19,800 | ..... | 31,900 | ..... | 5,420 | 3,720 | ..... |

*Daily discharge, in second-feet, of Klamath River near Requa, Cal., for the years ending Sept. 30, 1911–1913.*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 3,720 | 5,680 | 10,700 | 30,700 | 22,100 | 17,200 | 34,900 | 23,400 | 25,400 | 11,000 | 6,760 | 4,100 |
| 2 | 3,720 | 4,720 | 10,400 | 26,400 | 23,900 | 15,200 | 33,100 | 23,000 | 25,800 | 11,000 | 6,480 | 3,900 |
| 3 | 3,720 | 3,720 | 10,000 | 23,400 | 23,000 | 15,600 | 31,300 | 22,600 | 26,400 | 11,400 | 6,480 | 4,500 |
| 4 | 3,720 | 3,900 | 10,000 | 21,600 | 22,100 | 16,000 | 29,000 | 22,100 | 24,800 | 11,400 | 6,480 | 5,420 |
| 5 | 3,720 | 14,800 | 9,720 | 20,300 | 22,100 | 18,000 | 43,300 | 23,900 | 23,400 | 11,400 | 5,940 | 5,680 |
| 6 | 3,720 | 66,700 | 9,400 | 19,400 | 22,100 | 18,500 | 38,500 | 28,400 | 22,100 | 10,700 | 5,680 | 6,200 |
| 7 | 3,720 | 47,800 | 9,400 | 19,000 | 22,100 | 19,400 | 37,300 | 30,100 | 21,200 | 10,000 | 5,420 | 6,480 |
| 8 | 3,720 | 27,900 | 9,100 | 19,400 | 22,100 | 21,600 | 34,300 | 32,500 | 20,300 | 9,400 | 5,180 | 6,480 |
| 9 | 3,720 | 29,000 | 8,800 | 19,000 | 22,600 | 22,600 | 32,500 | 33,700 | 19,400 | 9,100 | 4,940 | 6,200 |
| 10 | 3,720 | 38,500 | 8,800 | 17,600 | 23,000 | 23,000 | 31,300 | 33,700 | 18,000 | 8,800 | 4,940 | 5,940 |
| 11 | 3,720 | 34,900 | 8,800 | 18,500 | 23,400 | 24,800 | 33,100 | 31,300 | 17,200 | 8,500 | 4,940 | 5,940 |
| 12 | 3,720 | 28,400 | 8,500 | 19,400 | 23,400 | 22,600 | 39,100 | 29,000 | 16,000 | 8,200 | 4,940 | 5,420 |
| 13 | 3,720 | 32,500 | 11,000 | 30,100 | 23,400 | 22,100 | 36,100 | 26,800 | 15,200 | 7,900 | 4,720 | 4,940 |
| 14 | 3,720 | 37,900 | 11,400 | 35,500 | 23,000 | 21,600 | 33,700 | 25,400 | 14,400 | 7,600 | 4,720 | 4,500 |
| 15 | 3,720 | 34,300 | 34,900 | 34,300 | 23,000 | 21,200 | 32,500 | 25,400 | 13,600 | 7,320 | 4,720 | 3,900 |
| 16 | 3,720 | 29,000 | 47,100 | 32,500 | 26,400 | 21,200 | 30,700 | 25,800 | 13,200 | 7,040 | 4,720 | 3,540 |
| 17 | 3,720 | 24,800 | 45,100 | 32,500 | 27,400 | 21,200 | 29,600 | 26,800 | 12,800 | 7,040 | 4,500 | 3,540 |
| 18 | 3,720 | 19,800 | 40,900 | 50,600 | 28,400 | 20,800 | 27,900 | 27,400 | 13,200 | 6,760 | 4,500 | 3,380 |
| 19 | 3,720 | 20,300 | 37,300 | 47,800 | 26,400 | 20,800 | 27,900 | 27,900 | 14,000 | 6,480 | 4,500 | 3,380 |
| 20 | 3,720 | 18,000 | 31,900 | 37,900 | 23,400 | 20,800 | 27,400 | 29,000 | 13,200 | 6,480 | 4,500 | 3,380 |
| 21 | 3,900 | 16,400 | 28,400 | 31,300 | 22,600 | 21,600 | 27,400 | 30,700 | 12,000 | 6,480 | 4,300 | 3,380 |
| 22 | 4,720 | 14,400 | 25,400 | 28,400 | 20,800 | 22,600 | 27,400 | 31,900 | 13,600 | 6,760 | 4,300 | 3,380 |
| 23 | 7,040 | 14,000 | 20,800 | 27,900 | 19,800 | 23,400 | 28,400 | 33,100 | 14,000 | 7,320 | 4,100 | 3,380 |
| 24 | 5,940 | 13,600 | 19,400 | 26,800 | 17,600 | 21,200 | 30,100 | 31,300 | 13,600 | 7,600 | 4,100 | 3,240 |
| 25 | 6,480 | 13,200 | 18,000 | 26,800 | 16,400 | 19,400 | 34,900 | 30,100 | 12,400 | 8,200 | 4,100 | 3,240 |
| 26 | 6,760 | 12,800 | 16,800 | 23,000 | 15,600 | 17,200 | 33,700 | 29,000 | 11,700 | 8,500 | 4,100 | 3,240 |
| 27 | 5,940 | 12,800 | 16,000 | 20,800 | 16,000 | 16,000 | 33,100 | 27,900 | 12,800 | 7,900 | 4,100 | 3,240 |
| 28 | 5,940 | 11,700 | 16,000 | 20,800 | 16,400 | 21,600 | 30,100 | 26,800 | 13,200 | 7,600 | 4,100 | 3,380 |
| 29 | 7,040 | 11,400 | 16,000 | 20,300 | ..... | 26,800 | 27,900 | 25,800 | 12,000 | 7,320 | 4,100 | 3,380 |
| 30 | 6,480 | 10,700 | 34,300 | 20,300 | ..... | 30,700 | 25,400 | 25,400 | 11,700 | 7,040 | 4,100 | 3,380 |
| 31 | 5,940 | ..... | 37,300 | 20,800 | ..... | 33,700 | ..... | 24,800 | ..... | 7,040 | 4,100 | ..... |

NOTE.—Daily discharge determined from a fairly well defined rating curve based on measurements made from the cable car since Sept. 30, 1912. Discharge interpolated for days in 1911 and 1912 for which gage heights were not recorded, and also for Aug. 29, 1913.

*Monthly discharge of Klamath River near Requa, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1910–11. | | | | | |
| December 25-31 | 10,000 | 8,800 | 9,140 | 127,000 | B. |
| January | 64,600 | 7,600 | 18,300 | 1,130,000 | B. |
| February | 42,100 | 14,000 | 23,200 | 1,290,000 | A. |
| March | 38,500 | 13,200 | 26,900 | 1,650,000 | A. |
| April | 40,900 | 24,400 | 30,300 | 1,800,000 | A. |
| May | 34,300 | 21,200 | 25,100 | 1,540,000 | A. |
| June | 27,900 | 10,000 | 18,300 | 1,090,000 | A. |
| July | 9,400 | 3,720 | 6,440 | 396,000 | B. |
| August | 3,540 | 2,500 | 2,930 | 180,000 | C. |
| September | 2,660 | 2,440 | 2,520 | 150,000 | C. |
| The period | ..... | ..... | ..... | 9,350,000 | |
| 1911–12. | | | | | |
| October | 3,100 | 2,580 | 2,760 | 170,000 | B. |
| November | 10,700 | 2,760 | 4,190 | 249,000 | B. |
| December | 7,040 | 3,540 | 4,450 | 274,000 | B. |
| January | 115,000 | 4,100 | 28,200 | 1,730,000 | B. |
| February | 132,000 | 17,600 | 37,800 | 2,170,000 | B. |
| March | 24,400 | 16,800 | 21,000 | 1,290,000 | A. |
| April | 42,700 | 14,000 | 19,100 | 1,140,000 | A. |
| May | 65,300 | 23,900 | 36,200 | 2,230,000 | A. |
| June | 31,300 | 11,400 | 20,000 | 1,190,000 | A. |
| July | 11,000 | 5,420 | 7,950 | 489,000 | B. |
| August | 5,420 | 3,540 | 4,310 | 265,000 | B. |
| September | 11,000 | 3,380 | 5,110 | 304,000 | B. |
| The year | 132,000 | 2,580 | 15,800 | 11,500,000 | |

*Monthly discharge of Klamath River near Requa, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912–13. | | | | | |
| October | 7,040 | 3,720 | 4,530 | 279,000 | B. |
| November | 66,700 | 3,720 | 21,800 | 1,300,000 | A. |
| December | 47,100 | 8,500 | 20,100 | 1,240,000 | A. |
| January | 50,600 | 17,600 | 26,600 | 1,640,000 | A. |
| February | 28,400 | 15,600 | 22,100 | 1,230,000 | A. |
| March | 33,700 | 15,200 | 21,200 | 1,300,000 | A. |
| April | 43,300 | 25,400 | 32,100 | 1,910,000 | A. |
| May | 33,700 | 22,100 | 27,900 | 1,720,000 | A. |
| June | 26,400 | 11,700 | 16,600 | 988,000 | A. |
| July | 11,400 | 6,480 | 8,360 | 514,000 | A. |
| August | 6,760 | 4,100 | 4,860 | 299,000 | B. |
| September | 6,480 | 3,240 | 4,340 | 258,000 | B. |
| The year | 66,700 | 3,240 | 17,500 | 12,700,000 | |

## MILLER CREEK NEAR CRESCENT, OREG.

LOCATION.—In sec. 2, T. 28 S., R. 7 E., about 4 miles above the Knott ranch and about 20 miles south of Crescent.

RECORDS AVAILABLE.—November 14, 1911, to December 31, 1912; August 17 to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff; read not more than once a week.

CHANNEL.—Sand and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made by wading or from foot-logs.

COOPERATION.—Station maintained in cooperation with the Hunter Land Co.

The water sinks completely a few miles below the gage, and it is probable that there is some underflow at the station. Miscellaneous measurements May 12, 1912, show about 2 second-feet more water 3 miles above the gage than at the gage and about 11 second-feet more water at the gage than 4 miles below. For this reason a better place for the gage can not be found.

Estimates can not be made for the period October to December, 1912.

The following discharge measurement was made by James E. Stewart:

August 17, 1913: Gage height, 1.11 feet; discharge, 14.3 second-feet.

*Daily gage height, in feet, of Miller Creek near Crescent, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Aug. | Sept. | Day. | Oct. | Nov. | Dec. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 1.70 | | | 16 | | | 1.80 | | |
| 2 | | | | | | 17 | | | | 1.11 | |
| 3 | | | | | | 18 | | | | | |
| 4 | | 0.95 | | | | 19 | | | | | |
| 5 | 0.55 | | | | | 20 | | 1.40 | | | 0.80 |
| 6 | | | | | 1.10 | 21 | 0.72 | | | | |
| 7 | | | | | | 22 | | | 1.60 | | |
| 8 | | | | | | 23 | | | | | |
| 9 | | | 1.87 | | | 24 | | | | | |
| 10 | | | | | | 25 | | | | | |
| 11 | | | | | | 26 | | | | | |
| 12 | .64 | 1.05 | | | | 27 | | | | | .70 |
| 13 | | | | | .85 | 28 | .78 | 1.60 | | | |
| 14 | | | | | | 29 | | | | | |
| 15 | | | | | | 30 | | | | 1.45 | |
| | | | | | | 31 | | | 1.23 | | |

NOTE.—The following estimates of discharge have been made: Aug. 17, 14 second-feet; Aug. 30, 24 second-feet; Sept. 6, 14 second-feet; Sept. 13, 9 second-feet; Sept. 20, 8 second-feet, and Sept. 27, 6.5 second-feet.

## SPRAGUE RIVER NEAR YAINAX, OREG.

LOCATION.—In the NW. ¼ sec. 20, T. 36 S., R. 13 E., 1 mile above the highway bridge on the main road between Yainax and Silver Lake, about 4 miles above the mouth of Sycan River and about 10 miles east of Yainax.

RECORDS AVAILABLE.—April 19, 1912, to September 30, 1913.

DRAINAGE AREA.—513 square miles.

GAGE.—Vertical staff.

CHANNEL.—Rocks and gravel; shifts slightly.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below the gage.

DIVERSIONS.—Considerable water is diverted on the forks above station.

ACCURACY.—Field conditions are good, but it is impossible at present to get enough gage records to make estimates of monthly discharge.

COOPERATION.—Station is maintained in cooperation with the United States Indian Service.

*Discharge measurements of Sprague River near Yainax, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Apr. 25 | Howard Kimble | 4.31 | 709 | Nov. 23 | R. R. Randell | 1.19 | 167 |
| June 3 | do | 3.72 | 539 | | | | |

*Daily gage height, in feet, of Sprague River near Yainax, Oreg., for the year ending Sept. 30, 1913.*

[D. Chockfoot and O. Smith, observers.]

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | |
| 2 | | | | 1.0 | 1.0 | | 4.1 | | | 1.6 | |
| 3 | | | | | | | | 3.7 | | | |
| 4 | | | | | | | | | | | |
| 5 | | | 1.0 | | | 3.9 | | | 2.1 | | |
| 6 | | | | | | | | | | | 1.2 |
| 7 | | | 1.0 | | | | | | | | |
| 8 | | 1.2 | | | | | | | | | |
| 9 | | | 1.0 | | | | | 3.1 | | 1.3 | |
| 10 | | | | 1.0 | | | | | | | |
| 11 | | | | | | | 5.1 | 3.1 | | | |
| 12 | | | 1.0 | | | 4.2 | | | 1.3 | | |
| 13 | | | | | | | | 2.6 | | | 1.0 |
| 14 | | | | | | | | | | | |
| 15 | | 1.2 | | | | | | 2.4 | | | |
| 16 | | | | 1.0 | 1.1 | | | | | 1.3 | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | 1.0 | 1.0 | 2.8 | | | | 1.2 | | |
| 20 | | | | | | 3.1 | | | | | 1.1 |
| 21 | | | | | | | | 1.9 | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | 1.0 | | | | | | 1.2 | |
| 24 | 1.2 | | | | | | | | | | |
| 25 | | | | | 2.8 | 4.3 | | 2.8 | | | |
| 26 | | | 1.0 | 1.0 | | | | | 2.2 | | |
| 27 | | | | | | | | | | | .9 |
| 28 | | | | | | | | 2.2 | | | |
| 29 | | | | | | | | | | | |
| 30 | 1.2 | | | | 4.8 | | | | | 1.4 | |
| 31 | | | | | | | | | | | |

*Daily discharge, in second-feet, of Sprague River near Chainax, Oreg., for the years ending Sept. 30, 1912–13.*

| Day. | Apr. | May. | June. | July. | Aug. | Sept. | Day. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | | 16 | | 813 | | | | |
| 1 | | | | | | | 17 | | 860 | 519 | | 150 | |
| 2 | | | | | | | 18 | | | | | | |
| 3 | | | | | | | 19 | 323 | 860 | | | | |
| 4 | | | | 197 | | | 20 | | | | | | |
| 5 | | 643 | | | | 160 | 21 | | | | | | |
| 6 | | | | | | | 22 | | | | | | |
| 7 | | | | | | | 23 | | 723 | 312 | | | |
| 8 | | | | | | | 24 | | 735 | 316 | | | |
| 9 | | 486 | 687 | | | | 25 | | | | | 141 | |
| 10 | | | | | | | 26 | | 735 | | | | |
| 11 | | | | 160 | | | 27 | | | | | | |
| 12 | | | | | | | 28 | | | | 150 | | |
| 13 | | | | | | | 29 | | | | | | |
| 14 | | | | | | | 30 | | | | | | |
| 15 | | | | 150 | | | 31 | | | | | | |

| Day. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | | | | | | | | | | | |
| 2 | | | | 132 | 132 | | 632 | | | 212 | |
| 3 | | | | | | | | 548 | | | |
| 4 | | | | | | | | | | | |
| 5 | | | 132 | | | 588 | | | 276 | | |
| 6 | | | | | | | | | | | 170 |
| 7 | | | 132 | | | | | | | | |
| 8 | | 150 | | | | | | | | | |
| 9 | | | 132 | | | | | 434 | | 180 | |
| 10 | | | | 132 | | | | | | | |
| 11 | | | | | | | 870 | 434 | | | |
| 12 | | | 132 | | | 654 | | | 180 | | |
| 13 | | | | | | | | 350 | | | 152 |
| 14 | | | | | | | | | | | |
| 15 | | 150 | | | | | | 318 | | | |
| 16 | | | | 132 | 141 | | | | | 180 | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | 132 | 132 | 352 | | | | 170 | | |
| 20 | | | | | | 434 | | | | | 161 |
| 21 | | | | | | | | 248 | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | 132 | | | | | | 170 | |
| 24 | 150 | | | | | | | | | | |
| 25 | | | | | 352 | 676 | | 382 | | | |
| 26 | | | 132 | 132 | | | | | 290 | | |
| 27 | | | | | | | | | | | 143 |
| 28 | | | | | | | | 290 | | | |
| 29 | | | | | | | | | | | |
| 30 | 150 | | | | 742 | | | | | 190 | |
| 31 | | | | | | | | | | | |

NOTE.—Discharge determined from rating curves, as follows: Apr. 19, 1912, to Mar. 30, 1913, well defined; Mar. 31 to Sept. 30, 1913, well defined.

## SPRAGUE RIVER AT CHILOQUIN, OREG.

LOCATION.—In sec. 3, T. 35 S., R. 7 E., at the Southern Pacific Co.'s bridge, 200 feet above mouth of river.

RECORDS AVAILABLE.—July 25, 1911, to September 30, 1913.

DRAINAGE AREA.—1,550 square miles.

GAGE.—Chain gage on railroad bridge.

CHANNEL.—Rocky; probably permanent; current swift.

DISCHARGE MEASUREMENTS.—Made from railroad bridge.

ACCURACY.—Gage heights probably somewhat affected by backwater from Williamson River, as there is very little fall between gage and junction of streams. Measuring conditions poor; an average curve gives fair results.

COOPERATION.—Station maintained in cooperation with the United States Reclamation Service and the United States Indian Service.

*Discharge measurements of Sprague River at Chiloquin, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 18 | H. W. Hincks | 1.10 | 380 | Apr. 5 | C. R. Hauke | 3.00 | 2,180 |
| 20 | do | 1.14 | 406 | 17 | do | 3.90 | 3,140 |
| Mar. 11 | J. W. Malin | 1.31 | 579 | May 8 | do | 2.48 | 1,440 |
| 13 | do | 1.58 | 735 | June 1 | Howard Kimble | 2.36 | 1,370 |
| 21 | C. R. Hauke | 1.70 | 830 | Aug. 6 | James E. Stewart | 1.22 | 452 |
| Apr. 1 | do | 2.68 | 1,710 | | | | |

*Daily gage height, in feet, of Sprague River at Chiloquin, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.2 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.7 | 2.8 | 2.3 | 1.5 | 1.4 | 1.1 |
| 2 | 1.2 | 1.1 | 1.3 | 1.2 | 1.2 | 1.2 | 2.7 | 2.8 | 2.3 | 1.5 | 1.4 | 1.1 |
| 3 | 1.2 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.8 | 2.8 | 2.3 | 1.5 | 1.4 | 1.1 |
| 4 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.9 | ..... | 2.3 | ..... | 1.3 | 1.1 |
| 5 | 1.2 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 3.0 | 2.5 | 2.2 | 1.5 | 1.3 | 1.1 |
| 6 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 3.0 | 2.5 | 2.1 | 1.4 | 1.2 | 1.1 |
| 7 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | ..... | 2.5 | 2.1 | 1.4 | 1.2 | 1.1 |
| 8 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.8 | 2.5 | 2.1 | 1.4 | 1.2 | 1.1 |
| 9 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.7 | 2.4 | 2.0 | 1.4 | 1.2 | 1.1 |
| 10 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 2.8 | 2.4 | 2.0 | 1.4 | 1.2 | 1.1 |
| 11 | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 3.0 | 2.4 | 1.9 | 1.3 | 1.2 | 1.1 |
| 12 | 1.1 | 1.1 | 1.3 | 1.2 | 1.1 | 1.4 | 3.0 | 2.6 | 1.9 | 1.3 | 1.2 | 1.2 |
| 13 | 1.1 | 1.1 | 1.3 | 1.2 | 1.1 | 1.6 | 3.0 | 2.6 | 1.8 | 1.2 | 1.2 | 1.1 |
| 14 | 1.1 | 1.1 | 1.3 | 1.2 | 1.1 | 1.7 | 3.2 | 2.7 | 1.8 | 1.2 | 1.2 | 1.1 |
| 15 | 1.1 | 1.1 | 1.2 | 1.2 | 1.1 | 1.8 | 3.6 | 2.8 | 1.8 | 1.2 | 1.2 | 1.1 |
| 16 | 1.1 | 1.1 | 1.2 | 1.2 | 1.1 | 1.6 | 4.0 | 2.8 | 1.7 | 1.2 | 1.2 | 1.1 |
| 17 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.5 | 3.7 | 2.8 | 1.6 | 1.2 | 1.2 | 1.1 |
| 18 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.5 | 3.5 | 2.7 | 1.6 | 1.2 | 1.2 | 1.1 |
| 19 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.5 | 3.5 | 2.6 | 1.5 | 1.2 | 1.2 | 1.1 |
| 20 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.6 | 3.4 | 2.6 | 1.5 | ..... | 1.2 | 1.1 |
| 21 | 1.1 | 1.2 | 1.2 | 1.1 | 1.1 | 1.7 | 3.3 | 2.6 | 1.4 | ..... | 1.2 | 1.1 |
| 22 | 1.1 | 1.3 | 1.2 | 1.1 | 1.1 | 1.6 | 3.3 | 2.5 | 1.4 | 1.2 | 1.2 | 1.1 |
| 23 | 1.1 | 1.3 | 1.2 | 1.1 | 1.2 | 1.5 | 3.2 | 2.5 | 1.4 | 1.2 | 1.2 | 1.1 |
| 24 | 1.1 | 1.3 | 1.2 | 1.1 | 1.1 | 1.4 | 3.0 | ..... | 1.3 | 1.2 | 1.2 | 1.1 |
| 25 | 1.1 | 1.3 | 1.2 | 1.1 | 1.1 | 1.4 | 3.0 | 2.4 | 1.4 | 1.2 | 1.2 | 1.1 |
| 26 | 1.1 | 1.3 | 1.2 | 1.1 | 1.1 | 1.3 | 2.9 | 2.4 | 1.4 | 1.3 | 1.2 | 1.1 |
| 27 | 1.1 | 1.3 | 1.1 | 1.1 | 1.1 | 1.3 | ..... | 2.4 | 1.5 | 1.4 | 1.2 | 1.1 |
| 28 | 1.1 | 1.3 | 1.2 | 1.2 | 1.1 | 1.3 | ..... | 2.4 | 1.5 | 1.4 | 1.2 | 1.1 |
| 29 | 1.1 | 1.3 | 1.2 | 1.2 | ..... | 1.5 | 2.8 | ..... | 1.5 | 1.4 | 1.1 | 1.1 |
| 30 | 1.1 | 1.3 | 1.2 | 1.2 | ..... | 2.2 | 2.8 | 2.3 | 1.5 | 1.4 | 1.1 | 1.1 |
| 31 | 1.1 | 1.3 | 1.2 | 1.2 | ..... | 2.5 | ..... | 2.3 | ..... | 1.4 | 1.1 | ..... |

*Daily discharge, in second-feet, of Sprague River at Chiloquin, Oreg., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | 500 | 430 | 11 | 470 | 430 | 21 | 450 | 430 |
| 2 | 490 | 430 | 12 | 470 | 430 | 22 | 440 | 430 |
| 3 | 490 | 430 | 13 | 470 | 430 | 23 | 440 | 430 |
| 4 | 490 | 430 | 14 | 460 | 430 | 24 | 440 | 430 |
| 5 | 490 | 430 | 15 | 460 | 430 | 25 | 440 | 430 |
| 6 | 480 | 430 | 16 | 460 | 430 | 26 | 430 | 430 |
| 7 | 480 | 430 | 17 | 460 | 430 | 27 | 430 | 430 |
| 8 | 480 | 430 | 18 | 450 | 430 | 28 | 430 | 450 |
| 9 | 480 | 430 | 19 | 450 | 430 | 29 | 430 | 450 |
| 10 | 470 | 430 | 20 | 450 | 430 | 30 | 430 | 450 |
| | | | | | | 31 | 430 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 450 | 390 | 450 | 390 | 640 | 790 | 870 | 870 | 1,420 | 570 | 390 | 390 |
| 2 | 450 | 390 | 450 | 390 | 640 | 710 | 790 | 960 | 1,420 | 570 | 390 | 390 |
| 3 | 450 | 390 | 450 | 390 | 640 | 710 | 790 | 1,050 | 1,420 | 570 | 390 | 450 |
| 4 | 450 | 390 | 450 | 450 | 640 | 710 | 790 | 1,140 | 1,420 | 510 | 390 | 450 |
| 5 | 450 | 390 | 450 | 450 | 640 | 710 | 710 | 1,230 | 1,420 | 510 | 390 | 450 |
| 6 | 450 | 390 | 450 | 450 | 640 | 710 | 710 | 1,320 | 1,420 | 510 | 390 | 390 |
| 7 | 450 | 390 | 450 | 450 | 710 | 710 | 710 | 1,320 | 1,320 | 510 | 390 | 390 |
| 8 | 450 | 390 | 450 | 450 | 710 | 710 | 790 | 1,320 | 1,320 | 510 | 390 | 390 |
| 9 | 450 | 390 | 450 | 450 | 710 | 710 | 790 | 1,230 | 1,320 | 510 | 330 | 390 |
| 10 | 450 | 390 | 450 | 510 | 710 | 710 | 870 | 1,230 | 1,230 | 510 | 330 | 390 |
| 11 | 450 | 450 | 450 | 510 | 790 | 710 | 870 | 1,140 | 1,140 | 510 | 390 | 390 |
| 12 | 450 | 450 | 450 | 510 | 790 | 710 | 870 | 1,140 | 1,140 | 450 | 390 | 390 |
| 13 | 450 | 450 | 450 | 510 | 870 | 710 | 870 | 1,050 | 1,140 | 450 | 330 | 390 |
| 14 | 450 | 450 | 450 | 570 | 870 | 710 | 870 | 1,050 | 1,140 | 450 | 390 | 390 |
| 15 | 450 | 450 | 450 | 640 | 960 | 710 | 870 | 1,140 | 1,140 | 450 | 450 | 390 |
| 16 | 450 | 450 | 450 | 640 | 960 | 710 | 870 | 1,140 | 1,140 | 390 | 390 | 390 |
| 17 | 450 | 450 | 450 | 570 | 960 | 710 | 870 | 1,230 | 1,140 | 390 | 330 | 450 |
| 18 | 450 | 450 | 450 | 570 | 1,050 | 640 | 870 | 1,230 | 1,050 | 390 | 330 | 390 |
| 19 | 450 | 450 | 450 | 510 | 1,050 | 640 | 870 | 1,320 | 960 | 390 | 450 | 390 |
| 20 | 450 | 450 | 450 | 510 | 960 | 640 | 870 | 1,420 | 960 | 390 | 510 | 390 |
| 21 | 450 | 450 | 450 | 510 | 960 | 640 | 710 | 1,520 | 960 | 390 | 450 | 390 |
| 22 | 450 | 450 | 450 | 510 | 960 | 640 | 710 | 1,520 | 960 | 390 | 450 | 390 |
| 23 | 450 | 450 | 450 | 570 | 960 | 640 | 710 | 1,630 | 870 | 390 | 390 | 390 |
| 24 | 450 | 450 | 450 | 570 | 960 | 710 | 710 | 1,630 | 790 | 390 | 330 | 330 |
| 25 | 450 | 450 | 450 | 570 | 960 | 710 | 710 | 1,630 | 790 | 330 | 330 | 330 |
| 26 | 450 | 450 | 450 | 640 | 960 | 710 | 790 | 1,630 | 790 | 390 | 390 | 390 |
| 27 | 450 | 450 | 390 | 640 | 870 | 710 | 790 | 1,630 | 790 | 390 | 390 | 390 |
| 28 | 450 | 450 | 390 | 640 | 870 | 790 | 790 | 1,520 | 710 | 390 | 390 | 390 |
| 29 | 450 | 450 | 390 | 640 | 870 | 790 | 870 | 1,520 | 640 | 330 | 330 | 450 |
| 30 | 450 | 450 | 390 | 640 | ..... | 870 | 870 | 1,520 | 640 | 330 | 390 | 450 |
| 31 | 450 | ..... | 390 | 640 | ..... | 870 | ..... | 1,420 | ..... | 330 | 390 | ..... |

*Daily discharge, in second-feet, of Sprague River at Chiloquin, Oreg., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 450 | 390 | 510 | 450 | 450 | 390 | 1,740 | 1,850 | 1,320 | 640 | 570 | 390 |
| 2 | 450 | 390 | 510 | 450 | 450 | 450 | 1,740 | 1,850 | 1,320 | 640 | 570 | 390 |
| 3 | 450 | 390 | 510 | 450 | 450 | 390 | 1,850 | 1,850 | 1,320 | 640 | 570 | 390 |
| 4 | 390 | 390 | 510 | 450 | 450 | 390 | 1,960 | 1,680 | 1,320 | 640 | 510 | 390 |
| 5 | 450 | 390 | 510 | 450 | 450 | 390 | 2,080 | 1,520 | 1,230 | 640 | 510 | 390 |
| 6 | 390 | 390 | 510 | 450 | 450 | 390 | 2,080 | 1,520 | 1,140 | 570 | 450 | 390 |
| 7 | 390 | 390 | 510 | 450 | 450 | 390 | 1,960 | 1,520 | 1,140 | 570 | 450 | 390 |
| 8 | 390 | 390 | 510 | 450 | 450 | 390 | 1,850 | 1,520 | 1,140 | 570 | 450 | 390 |
| 9 | 390 | 390 | 510 | 450 | 450 | 390 | 1,740 | 1,420 | 1,050 | 570 | 450 | 390 |
| 10 | 390 | 390 | 510 | 450 | 450 | 390 | 1,850 | 1,420 | 1,050 | 570 | 450 | 390 |
| 11 | 390 | 390 | 510 | 450 | 450 | 390 | 2,080 | 1,420 | 960 | 510 | 450 | 390 |
| 12 | 390 | 390 | 510 | 450 | 390 | 570 | 2,080 | 1,630 | 960 | 510 | 450 | 450 |
| 13 | 390 | 390 | 510 | 450 | 390 | 710 | 2,080 | 1,630 | 870 | 450 | 450 | 390 |
| 14 | 390 | 390 | 510 | 450 | 390 | 790 | 2,320 | 1,740 | 870 | 450 | 450 | 390 |
| 15 | 390 | 390 | 450 | 450 | 390 | 870 | 2,830 | 1,850 | 870 | 450 | 450 | 390 |
| 16 | 390 | 390 | 450 | 450 | 390 | 710 | 3,350 | 1,850 | 790 | 450 | 450 | 390 |
| 17 | 390 | 450 | 450 | 450 | 390 | 640 | 2,960 | 1,850 | 710 | 450 | 450 | 390 |
| 18 | 390 | 450 | 450 | 450 | 390 | 640 | 2,700 | 1,740 | 710 | 450 | 450 | 390 |
| 19 | 390 | 450 | 450 | 450 | 390 | 640 | 2,700 | 1,630 | 640 | 450 | 450 | 390 |
| 20 | 390 | 450 | 450 | 450 | 390 | 710 | 2,570 | 1,630 | 640 | 450 | 450 | 390 |
| 21 | 390 | 450 | 450 | 390 | 390 | 790 | 2,440 | 1,630 | 570 | 450 | 450 | 390 |
| 22 | 390 | 510 | 450 | 390 | 390 | 710 | 2,440 | 1,520 | 570 | 450 | 450 | 390 |
| 23 | 390 | 510 | 450 | 390 | 450 | 640 | 2,320 | 1,520 | 570 | 450 | 450 | 390 |
| 24 | 390 | 510 | 450 | 390 | 390 | 570 | 2,080 | 1,470 | 510 | 450 | 450 | 390 |
| 25 | 390 | 510 | 450 | 390 | 390 | 570 | 2,080 | 1,420 | 570 | 450 | 450 | 390 |
| 26 | 390 | 510 | 450 | 390 | 390 | 510 | 1,960 | 1,420 | 570 | 510 | 450 | 390 |
| 27 | 390 | 510 | 390 | 390 | 390 | 510 | 1,920 | 1,420 | 640 | 570 | 450 | 390 |
| 28 | 390 | 510 | 450 | 450 | 390 | 510 | 1,880 | 1,420 | 640 | 570 | 450 | 390 |
| 29 | 390 | 510 | 450 | 450 | ..... | 640 | 1,850 | 1,370 | 640 | 570 | 390 | 390 |
| 30 | 390 | 510 | 450 | 450 | ..... | 1,230 | 1,850 | 1,320 | 640 | 570 | 390 | 390 |
| 31 | 390 | ..... | 450 | 450 | ..... | 1,520 | ..... | 1,320 | ..... | 570 | 390 | ..... |

NOTE.—Discharge determined as follows: Aug. 1 to Oct. 31, 1911, by indirect method for shifting channels; Nov. 1, 1911, to Sept. 30, 1913, from rating curve fairly well defined above 1,000 second-feet, and for certain periods between those dates well defined below 1,000 second-feet.

*Monthly discharge of Sprague River at Chiloquin, Oreg., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| August | 500 | 430 | 459 | 28,200 | C. |
| September | 450 | 430 | 432 | 25,700 | C. |
| 1911–12. | | | | | |
| October | 450 | 450 | 450 | 27,700 | C. |
| November | 450 | 390 | 430 | 25,600 | C. |
| December | 450 | 390 | 440 | 27,100 | C. |
| January | 640 | 390 | 532 | 32,700 | C. |
| February | 1,050 | 640 | 838 | 48,200 | C. |
| March | 870 | 640 | 715 | 44,000 | B. |
| April | 870 | 710 | 806 | 48,000 | B. |
| May | 1,630 | 870 | 1,310 | 80,600 | B. |
| June | 1,420 | 640 | 1,090 | 64,900 | C. |
| July | 570 | 330 | 438 | 26,900 | C. |
| August | 510 | 330 | 386 | 23,700 | C. |
| September | 450 | 330 | 398 | 23,700 | B. |
| The year | 1,630 | 330 | 651 | 473,000 | |
| 1912–13. | | | | | |
| October | 450 | 390 | 398 | 24,500 | B. |
| November | 510 | 390 | 436 | 25,900 | B. |
| December | 510 | 390 | 475 | 29,200 | B. |
| January | 450 | 390 | 436 | 26,800 | B. |
| February | 450 | 390 | 416 | 23,100 | B. |
| March | 1,520 | 390 | 607 | 37,300 | C. |
| April | 3,350 | 1,740 | 2,180 | 130,000 | B. |
| May | 1,850 | 1,320 | 1,580 | 97,200 | B. |
| June | 1,320 | 510 | 866 | 51,500 | B. |
| July | 640 | 450 | 525 | 32,300 | B. |
| August | 570 | 390 | 460 | 28,300 | B. |
| September | 450 | 390 | 392 | 23,300 | C. |
| The year | 3,350 | 390 | 731 | 529,000 | |

## SYCAN RIVER NEAR YAINAX, OREG.

LOCATION.—In sec. 3, T. 36 S., R. 12 E., at the house of David Chocktoot, 2½ miles above the junction of Sycan and Sprague rivers, and about 13 miles above Yainax.

RECORDS AVAILABLE.—November 25, 1911, to June 30, 1913.

DRAINAGE AREA.—527 square miles.

GAGE.—Vertical staff.

CHANNEL.—Sand and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from a cable about 3 miles above the gage.

ACCURACY.—On account of shifting nature of channel and inaccessibility of this station, it has been difficult to get accurate results. Gage moved up to cable in November, 1913.

COOPERATION.—Station maintained in cooperation with the United States Indian Service.

*Discharge measurements of Sycan River near Yainax, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Apr. 25 | Howard Kimble | 5.23 | 629 | Nov. 22 | R. R. Randell | 1.81 | 70 |
| June 3 | do | 4.01 | 344 | 24 | do | 1.67 | 36 |

*Daily gage height, in feet, of Sycan River near Yainax, Oreg., for the year ending Sept. 30, 1913.*

[David Chocktoot, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.5 | 4.2 | | 4.3 |
| 2 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.5 | 4.0 | | 4.1 |
| 3 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.5 | 4.0 | | 4.0 |
| 4 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.5 | 4.0 | | 3.9 |
| 5 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.5 | 3.9 | | 3.8 |
| 6 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.6 | 3.8 | | 3.85 |
| 7 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.6 | 4.1 | | 3.7 |
| 8 | | 1.8 | 1.2 | 1.4 | 1.4 | 1.6 | 4.3 | | 3.6 |
| 9 | | 2.0 | 1.2 | 1.4 | | 1.6 | 4.2 | | 3.6 |
| 10 | | | 1.2 | 1.4 | 1.4 | 1.6 | 5.1 | 5.7 | 3.5 |
| 11 | | | 1.2 | 1.4 | 1.4 | 1.6 | 6.2 | 5.7 | 3.4 |
| 12 | | | 1.2 | 1.4 | 1.4 | 1.6 | 8.2 | 5.6 | 3.3 |
| 13 | | | 1.2 | 1.4 | 1.4 | 1.6 | 10.1 | 5.6 | 3.35 |
| 14 | | 2.1 | 1.2 | 1.4 | 1.4 | 1.6 | | 5.55 | 3.2 |
| 15 | | | | 1.4 | 1.4 | 1.6 | | 5.5 | |
| 16 | | | 1.1 | 1.4 | 1.4 | | | 5.4 | 3.1 |
| 17 | | 1.9 | 1.4 | 1.4 | 1.5 | 1.6 | | 6.2 | 3.1 |
| 18 | | 1.9 | 1.4 | 1.4 | 1.5 | 1.6 | | 6.1 | 3.0 |
| 19 | | 1.8 | 1.4 | 1.4 | 1.5 | 1.6 | | | 2.9 |
| 20 | | 1.9 | 1.3 | 1.4 | 1.5 | 1.6 | | | 2.7 |
| 21 | | 1.9 | 1.4 | 1.4 | 1.5 | 1.6 | | | 2.7 |
| 22 | | 1.9 | 1.4 | 1.4 | 1.5 | 1.6 | | | 2.75 |
| 23 | | 1.9 | 1.4 | 1.4 | 1.5 | 1.6 | | | 2.6 |
| 24 | | | 1.3 | 1.4 | 1.5 | 1.6 | | | 2.4 |
| 25 | 1.8 | | 1.3 | 1.4 | 1.5 | 1.6 | 5.4 | | |
| 26 | 1.8 | | 1.3 | 1.4 | 1.5 | 1.6 | 5.3 | | |
| 27 | 1.8 | | 1.3 | 1.4 | 1.5 | 1.6 | | | |
| 28 | 1.8 | | 1.3 | 1.4 | 1.5 | 2.1 | | | |
| 29 | 1.8 | | 1.3 | 1.4 | | 2.7 | | | |
| 30 | 1.8 | | 1.3 | 1.4 | | | | | |
| 31 | 1.8 | | 1.3 | 1.4 | | | | | |

NOTE.—Gage washed out by flood Apr. 13; temporary gage installed Apr. 25 and permanent gage at original datum June 3. All readings refer to datum of permanent gage.

*Daily discharge, in second-feet, of Sycan River near Yainax, Oreg., for the years ending Sept. 30, 1912–13.*

| Day. | Nov. | Dec. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | |
| 1 | | | | 372 | 507 | 110 | 44 |
| 2 | | | | 520 | 475 | 98 | 44 |
| 3 | | | | 560 | 442 | 88 | 44 |
| 4 | | | | 501 | 442 | 88 | 44 |
| 5 | | 35 | | 580 | 406 | 88 | 44 |
| 6 | | 35 | | 446 | 372 | 79 | 44 |
| 7 | | 27 | | 392 | 372 | 74 | 37 |
| 8 | | 27 | | 323 | 372 | 70 | 37 |
| 9 | | 35 | | 273 | 372 | 70 | 37 |
| 10 | | | | 306 | 372 | 70 | 37 |
| 11 | | | | 306 | 338 | 70 | |
| 12 | | | | 347 | 338 | 61 | |
| 13 | | | | 387 | 304 | 61 | |
| 14 | | | | 428 | 304 | 44 | |
| 15 | | | | 514 | 287 | 44 | |
| 16 | | | | 600 | 287 | 44 | |
| 17 | | | | 600 | 287 | 52 | |
| 18 | | | 112 | 620 | 271 | 50 | |
| 19 | | | 99 | 620 | 224 | 48 | |
| 20 | | | 99 | 640 | 217 | 46 | |
| 21 | | | 99 | 680 | 210 | 44 | |
| 22 | | | 105 | 680 | 203 | 61 | |
| 23 | | | 112 | 580 | 195 | 55 | |
| 24 | | | 119 | 520 | 156 | 50 | |
| 25 | 35 | | 125 | 500 | 156 | 44 | |
| 26 | 35 | | 125 | 500 | 156 | 44 | |
| 27 | 35 | | 125 | 540 | 156 | 44 | |
| 28 | 20 | | 112 | 540 | 145 | 44 | |
| 29 | 35 | | 139 | 520 | 133 | 44 | |
| 30 | 20 | | 225 | 520 | 121 | 44 | |
| 31 | | | | 540 | | 44 | |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. |
|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | |
| 1 | | 53 | 17 | 27 | 27 | 33 | 374 | | 400 |
| 2 | | 53 | 17 | 27 | 27 | 33 | 340 | | 360 |
| 3 | | 53 | 17 | 27 | 27 | 33 | 340 | | 341 |
| 4 | | 53 | 17 | 27 | 27 | 33 | 340 | | 323 |
| 5 | | 53 | 17 | 27 | 27 | 33 | 323 | | 306 |
| 6 | | 53 | 17 | 27 | 27 | 39 | 306 | | 314 |
| 7 | | 53 | 17 | 27 | 27 | 39 | 357 | | 289 |
| 8 | | 53 | 17 | 27 | 27 | 39 | 392 | | 273 |
| 9 | | 68 | 17 | 27 | 27 | 39 | 374 | | 273 |
| 10 | | 69 | 17 | 27 | 27 | 39 | 540 | 746 | 257 |
| 11 | | 71 | 17 | 27 | 27 | 39 | 760 | 746 | 241 |
| 12 | | 73 | 17 | 27 | 27 | 39 | 1,200 | 718 | 225 |
| 13 | | 75 | 17 | 27 | 27 | 39 | 1,680 | 718 | 233 |
| 14 | | 77 | 17 | 27 | 27 | 39 | | 704 | 210 |
| 15 | | 71 | 14 | 27 | 27 | 39 | | 690 | 202 |
| 16 | | 66 | 12 | 27 | 27 | 39 | | 664 | 195 |
| 17 | | 60 | 27 | 27 | 33 | 39 | | 890 | 195 |
| 18 | | 60 | 27 | 27 | 33 | 39 | | 860 | 181 |
| 19 | | 53 | 27 | 27 | 33 | 39 | | | 167 |
| 20 | | 60 | 22 | 27 | 33 | 39 | | | 141 |
| 21 | | 60 | 27 | 27 | 33 | 39 | | | 141 |
| 22 | | 60 | 27 | 27 | 33 | 39 | | | 148 |
| 23 | | 60 | 27 | 27 | 33 | 39 | | | 129 |
| 24 | | 54 | 22 | 27 | 33 | 39 | | | 106 |
| 25 | 53 | 48 | 22 | 27 | 33 | 39 | 664 | | |
| 26 | 53 | 42 | 22 | 27 | 33 | 39 | 638 | | |
| 27 | 53 | 36 | 22 | 27 | 33 | 39 | | | |
| 28 | 53 | 32 | 22 | 27 | 33 | 77 | | | |
| 29 | 53 | 27 | 22 | 27 | | 141 | | | |
| 30 | 53 | 22 | 22 | 27 | | 219 | | | |
| 31 | 53 | | 22 | 27 | | 296 | | | |

NOTE.—Discharge determined from rating curves, as follows: Nov. 25, 1911, to May 21, 1912, fairly well defined; May 22 to Aug. 10, 1912, fairly well defined; Sept. 23, 1912, to Apr. 13, 1913, fairly well defined between 30 and 900 second-feet; Apr. 14 to June 24, 1913, fairly well defined.

Mean discharge estimated for periods for which gage heights are not recorded as follows: Apr. 14–24, 1913, 750 second-feet; April 27 to May 9, 1913, 700 second-feet; May 19–31, 1913, 500 second-feet; June 25–30, 1913, 90 second-feet.

*Monthly discharge of Sycan River near Yainax, Oreg., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| Apr. 18–30 | 225 | 99 | 123 | 3,160 | B. |
| May | 680 | 273 | 499 | 30,700 | B. |
| June | 507 | 121 | 287 | 17,100 | B. |
| July | 110 | 44 | 60.4 | 3,710 | C. |
| Aug. 1–10 | 44 | 37 | 41.2 | 817 | C. |
| The period | | | | 55,500 | |
| 1912–13. | | | | | |
| Oct. 25–31 | 53 | 53 | 53.0 | 736 | B. |
| November | 77 | 22 | 55.6 | 3,310 | B. |
| December | 27 | 12 | 20.1 | 1,240 | C. |
| January | 27 | 27 | 27.0 | 1,660 | C. |
| February | 33 | 27 | 29.6 | 1,640 | C. |
| March | 296 | 33 | 56.6 | 3,480 | C. |
| April | | 306 | 656 | 39,000 | C. |
| May | | | 630 | 38,700 | C. |
| June | 400 | | 206 | 12,300 | B. |
| The period | | | | 102,000 | |

## WOOD RIVER AT FORT KLAMATH, OREG.

LOCATION.—In sec. 22, T. 33 S., R. 7½ E., at highway bridge one-fourth mile north of Fort Klamath.

RECORDS AVAILABLE.—August 5, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff attached to bridge.

CHANNEL.—Clean gravel; shifts.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

ACCURACY.—Results only fair on account of unstable conditions and lack of discharge measurements.

COOPERATION.—Station maintained by United States Reclamation Service.

The following discharge measurement was made by Leland Moser:

May 30, 1913: Gage height 1.65 feet; discharge, 290 second-feet.

*Daily gage height, in feet, of Wood River at Fort Klamath, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.45 | 1.50 | 1.35 | 1.00 | 1.50 | 1.70 | 1.90 | 1.50 | 1.65 | 1.95 | 1.90 | 1.75 |
| 2 | 1.45 | 1.50 | 1.35 | 1.05 | 1.50 | 1.70 | 1.90 | 1.50 | 1.65 | 1.95 | 1.90 | 1.75 |
| 3 | 1.47 | 1.60 | 1.30 | 1.05 | 1.50 | 1.70 | 1.90 | 1.55 | 1.70 | 1.95 | 1.90 | 1.80 |
| 4 | 1.50 | 1.60 | 1.30 | 1.05 | 1.50 | 1.70 | 1.90 | 1.55 | 1.65 | 2.00 | 1.90 | 1.85 |
| 5 | 1.50 | 1.60 | 1.30 | 1.00 | 1.50 | 1.75 | 1.90 | 1.60 | 1.60 | 1.95 | 1.85 | 1.80 |
| 6 | 1.45 | 1.65 | 1.30 | 1.00 | 1.50 | 1.75 | 1.95 | 1.60 | 1.65 | 1.90 | 1.80 | 1.75 |
| 7 | 1.45 | 1.65 | 1.30 | .95 | 1.50 | 1.75 | 1.95 | 1.65 | 1.65 | 1.85 | 1.80 | 1.70 |
| 8 | 1.45 | 1.65 | 1.35 | .95 | 1.50 | 1.75 | 2.00 | 1.65 | 1.95 | 1.85 | 1.75 | 1.65 |
| 9 | 1.45 | 1.70 | 1.35 | .95 | 1.50 | 1.70 | 2.05 | 1.75 | 2.00 | 1.80 | 1.80 | 1.65 |
| 10 | 1.45 | 1.65 | 1.40 | .95 | 1.50 | 1.70 | 2.15 | 1.85 | 1.80 | 1.75 | 1.80 | 1.65 |
| 11 | 1.45 | 1.55 | 1.45 | .95 | 1.50 | 1.70 | 2.25 | 1.95 | 1.70 | 1.70 | 1.80 | 1.65 |
| 12 | 1.45 | 1.55 | 1.45 | .95 | 1.50 | 1.70 | 2.30 | 1.95 | 1.75 | 1.70 | 1.80 | 1.65 |
| 13 | 1.45 | 1.50 | 1.50 | .95 | 1.50 | 1.70 | 2.30 | 2.00 | 1.70 | 1.75 | 1.75 | 1.65 |
| 14 | 1.40 | 1.50 | 1.50 | .95 | 1.50 | 1.70 | 2.20 | 2.00 | 1.70 | 1.75 | 1.75 | 1.65 |
| 15 | 1.40 | 1.50 | 1.50 | .95 | 1.50 | 1.70 | 2.10 | 2.00 | 1.70 | 1.70 | 1.70 | 1.60 |
| 16 | 1.40 | 1.50 | 1.50 | .95 | 1.50 | 1.70 | 2.00 | 2.00 | 1.70 | 1.65 | 1.70 | 1.60 |
| 17 | 1.40 | 1.45 | 1.50 | .95 | 1.50 | 1.70 | 1.95 | 2.00 | 1.70 | 1.65 | 1.70 | 1.60 |
| 18 | 1.40 | 1.45 | 1.50 | .95 | ..... | 1.70 | 1.95 | 1.90 | 1.65 | 1.65 | 1.70 | 1.60 |
| 19 | 1.40 | 1.45 | 1.40 | .95 | ..... | 1.70 | 1.95 | 1.80 | 1.60 | 1.65 | 1.70 | 1.55 |
| 20 | 1.40 | 1.45 | 1.30 | .95 | ..... | 1.70 | 1.95 | 1.80 | 1.60 | 1.65 | 1.75 | 1.60 |
| 21 | 1.45 | 1.45 | 1.30 | .90 | ..... | 1.70 | 1.80 | 1.75 | 1.60 | 1.70 | 1.75 | 1.60 |
| 22 | 1.45 | 1.40 | 1.35 | .90 | 1.60 | 1.70 | 1.80 | 1.60 | 1.70 | 1.80 | 1.75 | 1.60 |
| 23 | 1.45 | 1.40 | 1.35 | .90 | 1.60 | 1.70 | 1.65 | 1.60 | 1.70 | 2.20 | 1.75 | 1.50 |
| 24 | 1.45 | 1.40 | 1.35 | .95 | 1.60 | 1.70 | 1.60 | 1.60 | 1.75 | 2.50 | 1.75 | 1.50 |
| 25 | 1.45 | 1.40 | 1.30 | .95 | 1.60 | 1.70 | 1.60 | 1.55 | 1.80 | 2.00 | 1.75 | 1.55 |
| 26 | 1.45 | 1.35 | 1.30 | 1.05 | 1.70 | 1.70 | 1.60 | 1.55 | 2.00 | 1.90 | 1.70 | 1.55 |
| 27 | 1.45 | 1.35 | 1.30 | 1.15 | 1.70 | 1.70 | 1.60 | 1.55 | 2.25 | 1.90 | 1.70 | 1.55 |
| 28 | 1.45 | 1.35 | 1.30 | 1.20 | 1.70 | 1.75 | 1.60 | 1.60 | 2.00 | 1.85 | 1.70 | 1.55 |
| 29 | 1.50 | 1.35 | 1.20 | 1.30 | ..... | 1.70 | 1.50 | 1.60 | 1.95 | 1.85 | 1.70 | 1.55 |
| 30 | 1.50 | 1.35 | 1.20 | 1.40 | ..... | 1.75 | 1.50 | 1.65 | 1.90 | 1.85 | 1.65 | 1.55 |
| 31 | 1.50 | ..... | 1.10 | 1.50 | ..... | 1.80 | ..... | 1.60 | ..... | 1.90 | 1.70 | ..... |

*Daily discharge, in second-feet, of Wood River at Fort Klamath, Oreg., for the periods Aug. 1 to Nov. 30, 1911, and Apr. 1, to Sept. 30, 1913.*

| Day. | Aug. | Sept. | Oct. | Nov. | Day. | Aug. | Sept. | Oct. | Nov. |
|---|---|---|---|---|---|---|---|---|---|
| 1911. | | | | | 1911. | | | | |
| 1 | 315 | 290 | 291 | 262 | 16 | 325 | 292 | 281 | 305 |
| 2 | 315 | 290 | 291 | 262 | 17 | 325 | 287 | 281 | 285 |
| 3 | 315 | 290 | 291 | 262 | 18 | 325 | 287 | 281 | 285 |
| 4 | 315 | 290 | 295 | 262 | 19 | 315 | 287 | 281 | 278 |
| 5 | 355 | 290 | 295 | 259 | 20 | 315 | 287 | 281 | 270 |
| 6 | 335 | 290 | 286 | 262 | 21 | 315 | 287 | 281 | 270 |
| 7 | 335 | 290 | 286 | 271 | 22 | 315 | 287 | 281 | 270 |
| 8 | 335 | 290 | 286 | 280 | 23 | 315 | 287 | 267 | 267 |
| 9 | 345 | 292 | 286 | 280 | 24 | 306 | 296 | 267 | 267 |
| 10 | 345 | 292 | 286 | 280 | 25 | 306 | 300 | 267 | 264 |
| 11 | 345 | 292 | 286 | 275 | 26 | 306 | 300 | 267 | 262 |
| 12 | 325 | 292 | 286 | 285 | 27 | 297 | 300 | 267 | 262 |
| 13 | 335 | 292 | 286 | 295 | 28 | 297 | 291 | 267 | 261 |
| 14 | 325 | 292 | 281 | 305 | 29 | 297 | 291 | 267 | 262 |
| 15 | 325 | 292 | 281 | 335 | 30 | 297 | 291 | 267 | 270 |
| | | | | | 31 | 290 | ..... | 267 | ..... |

*Daily discharge, in second-feet, of Wood River at Fort Klamath, Oreg., for the periods Aug. 1 to Nov. 30, 1911, and Apr. 1 to Sept. 30, 1913*—Continued.

| Day. | Apr. | May. | June. | July. | Aug. | Sept. | Day. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913. | | | | | | | 1913. | | | | | | |
| 1 | 345 | 270 | 292 | 358 | 345 | 310 | 16 | 370 | 370 | 300 | 292 | 300 | 285 |
| 2 | 345 | 270 | 292 | 358 | 345 | 310 | 17 | 358 | 370 | 300 | 292 | 300 | 285 |
| 3 | 345 | 278 | 300 | 358 | 345 | 320 | 18 | 358 | 345 | 292 | 292 | 300 | 285 |
| 4 | 345 | 278 | 292 | 370 | 345 | 320 | 19 | 358 | 320 | 285 | 292 | 300 | 278 |
| 5 | 345 | 285 | 285 | 358 | 332 | 320 | 20 | 358 | 320 | 285 | 292 | 310 | 285 |
| 6 | 358 | 285 | 292 | 345 | 320 | 310 | 21 | 320 | 310 | 285 | 300 | 310 | 285 |
| 7 | 358 | 292 | 292 | 332 | 320 | 300 | 22 | 320 | 285 | 300 | 320 | 310 | 285 |
| 8 | 370 | 292 | 358 | 332 | 310 | 292 | 23 | 292 | 285 | 300 | 420 | 310 | 270 |
| 9 | 382 | 310 | 370 | 320 | 320 | 292 | 24 | 285 | 285 | 310 | 495 | 310 | 270 |
| 10 | 408 | 332 | 320 | 310 | 320 | 292 | 25 | 285 | 278 | 320 | 370 | 310 | 278 |
| 11 | 432 | 358 | 300 | 300 | 320 | 292 | 26 | 285 | 278 | 370 | 345 | 300 | 278 |
| 12 | 445 | 358 | 310 | 300 | 320 | 292 | 27 | 285 | 278 | 432 | 345 | 300 | 278 |
| 13 | 445 | 370 | 300 | 310 | 310 | 292 | 28 | 285 | 285 | 370 | 332 | 300 | 278 |
| 14 | 420 | 370 | 300 | 310 | 310 | 292 | 29 | 270 | 285 | 358 | 332 | 300 | 278 |
| 15 | 395 | 370 | 300 | 300 | 300 | 285 | 30 | 270 | 292 | 345 | 332 | 292 | 278 |
| | | | | | | | 31 | ..... | 285 | ..... | 345 | 300 | ..... |

NOTE.—Discharge determined as follows: Aug. 1–4, 1911, estimated; Aug. 5–31, 1911, from a fairly well defined rating curve; Sept. 1 to Nov. 17, 1911, by indirect method for shifting channels; Nov. 18–30, 1911, and Apr. 1 to Sept. 30, 1913, from a fairly well defined rating curve. No estimates made Dec. 1, 1911, to Mar 31, 1913; data insufficient.

*Monthly discharge of Wood River at Fort Klamath, Oreg., for the periods August to November, 1911, and April to September, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| August | 355 | 290 | 320 | 19,700 | B. |
| September | 300 | 287 | 291 | 17,300 | C. |
| October | 295 | 267 | 280 | 17,200 | C. |
| November | 335 | 259 | 275 | 16,400 | B. |
| The period | ..... | ..... | ..... | 70,600 | |
| 1913. | | | | | |
| April | 445 | 270 | 348 | 20,700 | C. |
| May | 370 | 270 | 309 | 19,000 | B. |
| June | 432 | 285 | 315 | 18,700 | B. |
| July | 495 | 292 | 334 | 20,500 | B. |
| August | 345 | 292 | 313 | 19,200 | B. |
| September | 320 | 270 | 290 | 17,300 | C. |
| The period | ..... | ..... | ..... | 115,000 | |

## ANNA CREEK AT CRATER LAKE, OREG.

LOCATION.—At highway bridge, about 200 feet below head, at Crater Lake, 17 miles from Fort Klamath, and 32 miles from Prospect.

RECORDS AVAILABLE.—August 8 to October 4, 1913.

DRAINAGE AREA.—Indeterminate. Creek heads in a spring about 200 feet above gage.

GAGE.—Vertical staff attached to embedded log on left bank about 150 feet below bridge.

CHANNEL.—Gravel and drift make shifting conditions probable.

COOPERATION.—Station maintained in cooperation with the Crater Lake National Park.

Data insufficient for estimate of discharge.

The following discharge measurement was made by James E. Stewart:

August 8, 1913: Gage height, 0.57 foot; discharge, 4.8 second-feet.

*Daily gage height, in feet, of Anna Creek at Crater Lake, Oreg., for the period Aug. 8, to Oct. 4, 1913.*

| Day. | Aug. | Sept. | Oct. | Day. | Aug. | Sept. | Oct. | Day. | Aug. | Sept. | Oct. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 11 | | | | 21 | | | |
| 2 | | | | 12 | | | | 22 | | | |
| 3 | | | | 13 | | .19 | | 23 | | | |
| 4 | | | 0.13 | 14 | | | | 24 | | | |
| 5 | | | | 15 | | | | 25 | | | |
| 6 | | 0.19 | | 16 | | | | 26 | | | |
| 7 | | | | 17 | | | | 27 | | .14 | |
| 8 | 0.57 | | | 18 | | | | 28 | | | |
| 9 | | | | 19 | | | | 29 | | | |
| 10 | | | | 20 | | .15 | | 30 | .19 | | |
| | | | | | | | | 31 | | | |

## FOUR MILE CREEK NEAR ODESSA, OREG.

LOCATION.—In sec. 9, T. 36 S., R. 5 E., just below the outlet of Four Mile Lake, about 15 miles northwest of Odessa.

RECORDS AVAILABLE.—April 6, 1912, to Sept. 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Barrett and Lawrence water stage recorder, installed 500 feet below dam, and old vertical staff which is 10 feet below dam at outlet of lake.

CHANNEL.—Rocks and gravel; probably permanent.

DISCHARGE MEASUREMENTS.—Made from a footbridge near the gage, or by wading.

REGULATION.—In the dam at the outlet of the lake is a gate for controlling the flow, but this gate has been kept open since station was established.

ACCURACY.—Results good since water-stage recorder was installed, except in winter and during extreme low water.

COOPERATION.—Gage-height record furnished by Rogue River Valley Canal Co.

*Discharge measurements of Four Mile Creek near Odessa, Oreg., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 18 | Howard Kimble | 0.66 | [a] 1.0 | Nov. 15 | R. R. Randell | 1.42 | 3.64 |
| May 28 | ....do | 1.75 | 46 | | | | |

[a] Estimated.

*Daily gage height, in feet, of Four Mile Creek near Odessa, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 1.47 | 1.54 | 1.76 | 1.75 | | |
| 2 | | | | | | | 1.46 | 1.53 | 1.77 | 1.75 | 1.46 | 1.00 |
| 3 | | | | | 1.48 | | 1.48 | 1.51 | 1.79 | 1.74 | 1.46 | |
| 4 | | | | | | | 1.48 | 1.50 | 1.80 | 1.74 | | |
| 5 | | | | | | 1.33 | 1.48 | 1.51 | 1.82 | 1.73 | | |
| 6 | | | 1.35 | | | | 1.49 | 1.51 | 1.84 | 1.74 | | .90 |
| 7 | | 1.40 | | 1.53 | | | 1.48 | 1.54 | 1.81 | | | |
| 8 | | | | | | | 1.48 | 1.56 | 1.82 | | | |
| 9 | | | | | | | 1.48 | 1.61 | 1.81 | | 1.35 | |
| 10 | | | | | 1.48 | | 1.47 | 1.66 | 1.81 | | | |
| 11 | | | | | | | 1.48 | 1.69 | 1.80 | 1.70 | | .90 |
| 12 | | | | | | 1.33 | 1.49 | 1.70 | 1.80 | 1.67 | | |
| 13 | | | 1.40 | | | | 1.47 | 1.70 | 1.80 | 1.65 | | |
| 14 | | | | 1.60 | | | 1.46 | 1.70 | 1.79 | 1.59 | | |
| 15 | | 1.40 | | | | | 1.45 | 1.71 | 1.79 | 1.54 | | |
| 16 | | | | | | | 1.44 | 1.71. | 1.78 | | | |
| 17 | | | 1.53 | | 1.45 | | 1.44 | 1.70 | 1.77 | | | |
| 18 | 0.66 | | | | | 1.40 | 1.45 | 1.72 | 1.76 | | 1.23 | |
| 19 | | | | | | | 1.46 | 1.74 | 1.76 | 1.50 | | .60 |
| 20 | | 1.45 | | 1.60 | | | 1.47 | 1.74 | 1.75 | 1.50 | | |
| 21 | | | | | | | 1.48 | 1.75 | 1.75 | 1.50 | | |
| 22 | | | | | | | 1.50 | 1.79 | 1.74 | 1.51 | | |
| 23 | | | | | | | 1.52 | 1.80 | 1.73 | 1.54 | | |
| 24 | | | 1.52 | | | | 1.52 | 1.82 | 1.73 | 1.54 | | |
| 25 | | | | | | 1.53 | | 1.83 | 1.73 | 1.55 | 1.19 | |
| 26 | | | | 1.58 | | | 1.52 | 1.84 | 1.73 | 1.52 | | |
| 27 | | 1.31 | | | 1.45 | | 1.52 | | 1.73 | 1.52 | | |
| 28 | | | | | | | 1.52 | 1.75 | 1.74 | | | |
| 29 | | | | | | | 1.54 | 1.75 | 1.74 | | | |
| 30 | | | 1.60 | | | | 1.54 | 1.74 | 1.75 | | | |
| 31 | | | | 1.50 | | | | 1.75 | | | | |

NOTE.—All readings refer to datum of water stage recorder but on account of the small fluctuation and lack of sensitiveness of the gage, only the observer's readings have been used, except those taken during the spring flood. Gage heights undoubtedly affected by ice about Dec. 17 to Feb. 27 as no increase in discharge could be expected at the extremely high elevation (about 5,800 feet) during the winter. Gage readings Mar. 25, raised by snow jams; old gage read 0.90 foot.

*Daily discharge, in second-feet, of Four Mile Creek near Odessa, Oreg., for the years ending Sept. 30, 1912–13.*

| Day. | Apr. | May. | June. | July. | Aug. | Day. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912. | | | | | | 1912. | | | | | |
| 1 | 5.8 | 12 | 50 | 54 | 8.9 | 16 | 9.2 | 26 | 56 | 38 | |
| 2 | 5.8 | 12 | 52 | 53 | 8.2 | 17 | 9.2 | 29 | 57 | 35 | |
| 3 | 5.8 | 12 | 54 | 52 | 7.6 | 18 | 9.1 | 32 | 58 | 33 | |
| 4 | 5.8 | 12 | 56 | 52 | 7.0 | 19 | 9.0 | 34 | 58 | 30 | |
| 5 | 5.8 | 13 | 57 | 51 | 6.4 | 20 | 8.9 | 37 | 59 | 27 | |
| 6 | 5.8 | 13 | 71 | 50 | 5.8 | 21 | 8.8 | 38 | 60 | 23 | |
| 7 | 8.6 | 13 | 85 | 50 | 5.2 | 22 | 8.7 | 39 | 60 | 20 | |
| 8 | 8.6 | 14 | 99 | 49 | 4.6 | 23 | 8.6 | 40 | 59 | 18 | |
| 9 | 8.3 | 14 | 84 | 48 | | 24 | 9.2 | 40 | 58 | 15 | |
| 10 | 8.3 | 16 | 72 | 48 | | 25 | 9.8 | 41 | 58 | 14 | |
| 11 | 8.4 | 16 | 58 | 47 | | 26 | 10 | 42 | 57 | 13 | |
| 12 | 8.6 | 18 | 58 | 47 | | 27 | 10 | 43 | 56 | 12 | |
| 13 | 8.6 | 20 | 57 | 44 | | 28 | 11 | 42 | 56 | 11 | |
| 14 | 8.9 | 20 | 57 | 42 | | 29 | 12 | 44 | 56 | 10 | |
| 15 | 9.2 | 23 | 56 | 40 | | 30 | 12 | 46 | 54 | 10 | |
| | | | | | | 31 | | 48 | | 9.0 | |

*Daily discharge, in second-feet, of Four Mile Creek near Odessa, Oreg., for the years ending Sept. 30, 1912–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Mar. | Apr. | May | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | |
| 1 | | | | | 6.7 | 12 | 49 | 46 | | |
| 2 | | | | | 6.3 | 11 | 52 | 46 | 6.3 | 1.1 |
| 3 | | | | | 7.1 | 9.0 | 56 | 44 | 6.3 | |
| 4 | | | | | 7.1 | 8.0 | 59 | 44 | | |
| 5 | | | | 2.8 | 7.1 | 9.0 | 65 | 42 | | |
| 6 | | | 3.0 | | 7.6 | 9.0 | 71 | 44 | | .9 |
| 7 | | 3.7 | | | 7.1 | 12 | 62 | 42 | | |
| 8 | | | | | 7.1 | 14 | 65 | 40 | | |
| 9 | | | | | 7.1 | 20 | 62 | 38 | 3.0 | |
| 10 | | | | | 6.7 | 28 | 62 | 36 | | |
| 11 | | | | | 7.1 | 32 | 59 | 34 | | .9 |
| 12 | | | | 2.8 | 7.6 | 34 | 59 | 29 | | |
| 13 | | | 3.7 | | 6.7 | 34 | 59 | 26 | | |
| 14 | | | | | 6.3 | 34 | 56 | 17 | | |
| 15 | | 3.7 | | | 5.8 | 36 | 56 | 12 | | |
| 16 | | | | | 5.4 | 36 | 54 | 11 | | |
| 17 | | | | | 5.4 | 34 | 52 | 10 | | |
| 18 | 0.6 | | | 3.7 | 5.8 | 39 | 49 | 9.0 | 2.0 | |
| 19 | | | | | 6.3 | 44 | 49 | 8.0 | | .5 |
| 20 | | 5.8 | | | 6.7 | 44 | 46 | 8.0 | | |
| 21 | | | | | 7.1 | 46 | 46 | 8.0 | | |
| 22 | | | | | 8.0 | 56 | 44 | 9.0 | | |
| 23 | | | | | 10 | 59 | 42 | 12 | | |
| 24 | | | | | 10 | 65 | 42 | 12 | | .0 |
| 25 | | | | 4.1 | 10 | 68 | 42 | 13 | 1.8 | |
| 26 | | | | | 10 | 71 | 42 | 10 | | |
| 27 | | 2.5 | | | 10 | 58 | 42 | 10 | | |
| 28 | | | | | 10 | 46 | 44 | 9.4 | | |
| 29 | | | | | 12 | 46 | 44 | 8.7 | | |
| 30 | | | | | 12 | 44 | 46 | 8.1 | | .0 |
| 31 | | | | | | 46 | | 7.5 | | |

NOTE.—Discharge determined from rating curves, as follows: Apr. 6 to Aug. 8, 1912, and Mar. 25, 1913, well defined; applied to readings on old staff gage at dam. Oct. 18, 1912, to Sept. 30, 1913, fairly well defined; applied to reading on water-stage recorder. Discharge Apr. 1 to Aug. 8, 1912, and during July, 1913, interpolated for days when gage was not read.

*Monthly discharge of Four Mile Creek near Odessa, Oreg., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912. | | | | | |
| April | 12 | 5.8 | 8.59 | 511 | C. |
| May | 48 | 12 | 27.4 | 1,680 | C. |
| June | 99 | 50 | 60.9 | 3,620 | C. |
| July | 54 | 9.0 | 33.7 | 2,070 | C. |
| August 1–8 | 8.9 | 4.6 | 6.71 | 106 | C. |
| The period | | | | 7,990 | |
| 1912–13. | | | | | |
| October | | | [a] 1.0 | 61 | D. |
| November | 5.8 | 2.5 | 3.92 | 233 | C. |
| December | | | [a] 3.0 | 184 | D. |
| January | | | [a] 3.0 | 184 | D. |
| February | | | [a] 3.0 | 167 | D. |
| March | 4.1 | 2.8 | 3.35 | 206 | C. |
| April | 12 | 5.4 | 7.74 | 461 | B. |
| May | 71 | 8.0 | 35.6 | 2,190 | B. |
| June | 71 | 42 | 52.5 | 3,120 | B. |
| July | 46 | 7.5 | 22.4 | 1,380 | B. |
| August | 6.3 | 1.8 | 3.28 | 202 | C. |
| September | 1.1 | .0 | .57 | 34 | D. |
| The year | 71 | .0 | 11.6 | 8,420 | |

[a] Estimated.

## TULE LAKE NEAR MERRILL, OREG.

LOCATION.—In sec. 8, T. 41 S., R. 11 E., at J. F. Adams's ranch, near the mouth of Lost River, 3 miles east of Merrill, Klamath County.

RECORDS AVAILABLE.—May 17, 1904, to September 30, 1913.

GAGE.—Vertical staff fastened to boathouse on shore of lake since July 26, 1912. Zero of the gage is at elevation 4,050 feet. A vertical staff on a post driven in the lake bed had been used previously. The elevation of its zero as determined from the best available information has been as follows:

| | Feet. | | Feet. |
|---|---|---|---|
| May 17, 1904 | 4,047.73 | May 11, 1907 | 4,048.56 |
| Oct. 21, 1904 | 4,047.76 | Nov. 27, 1908 | [1] 4,048.60 |

The gage readings have been published as reported and no attempt has been made to reduce them to a uniform datum. A graph of the gage heights has failed to reveal any critical points that would account for a sudden change. It is therefore likely that the gage was raised by the ice a little at a time during the winters of 1905–6 and 1906–7. For this reason the gage heights prior to May, 1907, should not be used for any refined studies.

COOPERATION.—Since May, 1909, station has been maintained by United States Reclamation Service and records have been prepared for publication by the United States Geological Survey.

*Daily gage height, in feet, of Tule Lake at Merrill, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 3.15 | 3.20 | | | | | 2.90 | 2.40 |
| 2 | | | | | 3.25 | 3.00 | | |
| 3 | | | | 3.50 | | | | 2.35 |
| 4 | | | | | 3.25 | 3.00 | 2.80 | |
| 5 | | | 3.25 | | | | | 2.25 |
| 6 | | | | | 3.25 | | 2.80 | |
| 7 | | | | | | 3.00 | | |
| 8 | 3.20 | 3.20 | | | | | 2.80 | 2.25 |
| 9 | | | | | 3.15 | 2.95 | | |
| 10 | | | | 3.40 | | | | 2.25 |
| 11 | | | | | 3.20 | 2.90 | 2.90 | |
| 12 | | | 3.40 | | | | | 2.20 |
| 13 | | | | | 3.10 | | 2.75 | |
| 14 | | | | | | 2.85 | | |
| 15 | 3.20 | 3.20 | | | | | 2.70 | 2.20 |
| 16 | | | | | 3.05 | 2.80 | | |
| 17 | | | | 3.30 | | | | 2.20 |
| 18 | | | | | 3.15 | 2.80 | 2.60 | |
| 19 | | | 3.50 | | | | | 2.18 |
| 20 | | | | | 3.10 | | 2.60 | |
| 21 | | | | | | 2.80 | | |
| 22 | 3.20 | 3.20 | | | | | 2.60 | 2.15 |
| 23 | | | | | 3.10 | 2.80 | | |
| 24 | | | | | | | | 2.10 |
| 25 | | | | | 3.05 | 3.00 | 2.55 | |
| 26 | | | 3.50 | 3.30 | | | | 2.10 |
| 27 | | | | | 3.00 | | 2.55 | |
| 28 | | | | 3.30 | | 2.90 | | |
| 29 | | 3.20 | | | | | 2.50 | 2.05 |
| 30 | | | | 3.30 | 3.05 | 2.80 | | |
| 31 | | | | | | | | |

NOTE.—Gage was checked Feb. 1 and found to have settled on account of knocking out of foundation pile from boathouse to which it was attached. Readings prior to that date have been discarded. Lake frozen from some date not recorded, probably in December, until about Apr. 12.

[1] Referred to the original bench mark installed in 1904. According to another bench mark it was a levation 4,048.4 feet.

## MILLER CREEK NEAR LORELLA, OREG.

LOCATION.—In sec. 7, T. 40 S., R. 14 E., at the site of an old wagon bridge about three-fourths mile above the highway bridge, a mile east of the Swingle ranch in Langell Valley, and 3 miles south of Lorella, Klamath County.

RECORDS AVAILABLE.—April 1, 1909, to September 30, 1913. Records were kept August 10, 1904, to December, 1908, at a former station in sec. 12, T. 39 S., R. 13 E., at the lower end of Horsefly Valley and 10 miles or more by creek above the present station; there is only a small amount of inflow between the two points.

GAGE.—Friez water-stage recorder installed on left bank, attached to old bridge abutment.

CHANNEL.—Stream bed, rocks, and gravel covered with some silt; control fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation apparently not materially affected by ice, as control remains open; open-channel rating curve formerly applied throughout winter but no discharge has been computed for low stages in winter of 1913.

DIVERSIONS.—A small irrigating flume carrying about 1 second-foot diverts just above the present station and there is probably a considerable area irrigated above the station.

REGULATION.—Flow may be occasionally affected by a rock and brush diversion dam just above gage.

ACCURACY.—Results considered good for higher stages as the rating curve defined by measurements made in 1910–11 has been confirmed in 1915–16; for low and medium stages the rating is very uncertain and no estimates have been attempted except during the months of considerable run-off.

COOPERATION.—Field data furnished by United States Reclamation Service.

*Daily gage height, in feet, of Miller Creek near Lorella, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ..... | 2.70 | 2.70 | 2.60 | 2.60 | 2.60 | 6.70 | 4.05 | 2.85 | 3.00 | ..... | 2.05 |
| 2 | ..... | 2.70 | 2.70 | 2.60 | 2.60 | 2.60 | 6.25 | 3.90 | 2.60 | 2.90 | 2.30 | 2.05 |
| 3 | ..... | ..... | 2.70 | 2.60 | ..... | 2.60 | 5.75 | 3.70 | 2.55 | 2.85 | 2.20 | 2.10 |
| 4 | ..... | ..... | 2.65 | 2.60 | ..... | 2.70 | 6.10 | 3.55 | 2.50 | 2.85 | 2.20 | 2.15 |
| 5 | 2.60 | ..... | 2.65 | 2.60 | ..... | 3.00 | 6.50 | 3.45 | 2.60 | 2.80 | 2.10 | 2.20 |
| 6 | 2.60 | ..... | 2.65 | ..... | ..... | 3.05 | 6.15 | 3.30 | 2.65 | 2.80 | 2.05 | 2.20 |
| 7 | ..... | ..... | 2.60 | ..... | ..... | 3.30 | 6.15 | 3.20 | 2.70 | 2.85 | 2.05 | 2.20 |
| 8 | ..... | ..... | 2.60 | ..... | 2.60 | 3.30 | 6.60 | 3.15 | 2.70 | 2.80 | 2.05 | 2.20 |
| 9 | ..... | ..... | 2.60 | ..... | 2.60 | 3.35 | 6.95 | 3.10 | 2.75 | 2.75 | 2.05 | 2.25 |
| 10 | ..... | 2.80 | 2.60 | ..... | 2.60 | 3.30 | 7.40 | 3.10 | 2.85 | 2.70 | 2.05 | 2.30 |
| 11 | ..... | 2.75 | 2.60 | 2.60 | 2.60 | 3.10 | 8.00 | 3.15 | 2.80 | 2.65 | 2.05 | 2.30 |
| 12 | 2.60 | 2.80 | 2.60 | 2.60 | 2.60 | 3.00 | 7.85 | 3.20 | 2.80 | 2.60 | 2.05 | 2.30 |
| 13 | 2.60 | 2.80 | 2.60 | 2.60 | 2.60 | 2.75 | 7.70 | 3.30 | 2.80 | ..... | 2.05 | 2.30 |
| 14 | 2.60 | 2.80 | 2.65 | 2.60 | 2.60 | 2.70 | 6.70 | 3.35 | 2.80 | ..... | 2.15 | 2.30 |
| 15 | ..... | 2.85 | 2.85 | 2.60 | 2.60 | 2.75 | 6.60 | 3.30 | 2.85 | ..... | 2.15 | 2.30 |
| 16 | ..... | 2.90 | 2.70 | 2.60 | 2.60 | 2.95 | 6.50 | 3.25 | 2.85 | ..... | 2.10 | 2.30 |
| 17 | ..... | 2.90 | 2.65 | 2.60 | 2.60 | 3.10 | 5.80 | 3.20 | 2.80 | ..... | 2.15 | 2.30 |
| 18 | ..... | 2.85 | 2.60 | 2.60 | 2.60 | 2.95 | 6.10 | 3.20 | 2.80 | ..... | 2.15 | 2.30 |
| 19 | 2.60 | 2.80 | 2.55 | 2.60 | 2.60 | 2.95 | 5.95 | 3.25 | 2.80 | 2.40 | 2.15 | 2.35 |
| 20 | ..... | 2.80 | 2.55 | 2.60 | 2.60 | 2.75 | 5.70 | 3.40 | 2.80 | 2.40 | 2.15 | 2.30 |
| 21 | ..... | 2.75 | 2.55 | 2.60 | ..... | 2.80 | 5.45 | 3.30 | 2.80 | 2.30 | 2.15 | 2.30 |
| 22 | ..... | 2.75 | 2.60 | 2.60 | 2.60 | 2.70 | 5.20 | 3.20 | 2.80 | 2.30 | 2.15 | 2.30 |
| 23 | ..... | 2.75 | 2.60 | ..... | 2.60 | 2.65 | 4.75 | 3.10 | 2.80 | 2.40 | 2.10 | 2.35 |
| 24 | ..... | 2.75 | 2.60 | ..... | 2.60 | 2.65 | 4.45 | 3.00 | 2.80 | 4.00 | 2.10 | 2.35 |
| 25 | ..... | 2.75 | 2.60 | 2.60 | 2.60 | 2.55 | 4.30 | 2.85 | 2.85 | 3.95 | 2.10 | 2.35 |
| 26 | 2.70 | 2.75 | 2.60 | 2.60 | 2.60 | 2.45 | 4.10 | 2.75 | 2.90 | 3.95 | 2.05 | 2.35 |
| 27 | 2.70 | 2.75 | 2.60 | 2.60 | 2.60 | 2.45 | 3.95 | 2.65 | 2.95 | 3.55 | 2.05 | 2.40 |
| 28 | 2.70 | 2.75 | 2.60 | 2.60 | ..... | 2.55 | 3.90 | 2.65 | 3.00 | 3.20 | 2.05 | 2.40 |
| 29 | 2.70 | 2.75 | 2.60 | 2.60 | ..... | 3.40 | 3.85 | 3.05 | 3.10 | 3.05 | 2.05 | 2.40 |
| 30 | 2.70 | 2.70 | 2.60 | ..... | ..... | 4.85 | 4.00 | 3.10 | 3.05 | 2.85 | 2.05 | 2.40 |
| 31 | 2.70 | ..... | 2.60 | ..... | ..... | 6.10 | ..... | 3.10 | ..... | ..... | 2.05 | ..... |

*Daily discharge, in second-feet, of Miller Creek near Lorella, Oreg., for the year ending Sept. 30, 1913.*

| Day. | Mar. | Apr. | May. | June. | July. | Day. | Mar. | Apr. | May. | June. | July. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 1,120 | 92 | 2.0 | 4.0 | 16 | 3.2 | 1,000 | 11.0 | 2.0 | 0.1 |
| 2 | .5 | 850 | 64 | .5 | 2.5 | 17 | 6,0 | 626 | 9,0 | 1.5 | .0 |
| 3 | .5 | 604 | 38 | .4 | 2.0 | 18 | 3.2 | 770 | 9,0 | 1.5 | .0 |
| 4 | 1.0 | 770 | 26 | .2 | 2.0 | 19 | 3.2 | 696 | 11 | 1.5 | .0 |
| 5 | 4,0 | 1,000 | 20 | .5 | 1.5 | 20 | 1.2 | 582 | 17 | 1.5 | .0 |
| 6 | 5.0 | 795 | 13 | .8 | 1.5 | 21 | 1.5 | 481 | 13 | 1.5 | .0 |
| 7 | 13 | 795 | 9,0 | 1.0 | 2.0 | 22 | 1.0 | 393 | 9,0 | 1.5 | .0 |
| 8 | 13 | 1,060 | 8,0 | 1.0 | 1.5 | 23 | .8 | 267 | 6,0 | 1.5 | .0 |
| 9 | 15 | 1,300 | 6,0 | 1.2 | 1.2 | 24 | .8 | 190 | 4,0 | 1.5 | 81 |
| 10 | 13 | 1,650 | 6.0 | 2.0 | 1.0 | 25 | .4 | 152 | 2.0 | 2.0 | 72 |
| 11 | 6.0 | 2,160 | 8,0 | 1.5 | .8 | 26 | .1 | 102 | 1.2 | 2.5 | 72 |
| 12 | 4.0 | 2,020 | 9.0 | 1.5 | .5 | 27 | .1 | 72 | .8 | 3.2 | 26 |
| 13 | 1.2 | 1,890 | 13 | 1.5 | .4 | 28 | .4 | 64 | .8 | 4.0 | 9.0 |
| 14 | 1.0 | 1,120 | 15 | 1.5 | .3 | 29 | 17 | 57 | 5.0 | 2.0 | 5.0 |
| 15 | 1.2 | 1,060 | 13 | 2.0 | .2 | 30 | 293 | 81 | 6.0 | 5.0 | 2.0 |
| | | | | | | 31 | 770 | | 6.0 | | 1.0 |

NOTE.—Discharge determined from a rating curve well defined above 200 second-feet. Below 200 second-feet it is based on measurements made in 1915 and 1916 and its applicability to gage heights taken in 1913 is doubtful. July 13–16, discharge interpolated. The true discharge for the early part of March and May to July may be somewhat greater than the estimates given.

*Monthly discharge of Miller Creek near Lorella, Oreg., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| March | 770 | 0.1 | 38.1 | 2,340 | C. |
| April | 2,160 | 57 | 791 | 47,100 | B. |
| May | 92 | .8 | 14.5 | 892 | B. |
| June | 6 | .2 | 1.81 | 108 | D. |
| July | 81 | 0 | 9.34 | 574 | C. |
| The period | | | | 51,000 | |

NOTE.—Discharge October to February and for August and September probably ranged from 0 to 5 or 10 second-feet, and the total run-off for these months is believed to have been between 500 and 1,000 acre-feet.

## SHASTA RIVER NEAR MONTAGUE, CAL.

LOCATION.—In the N. ½ NE. ¼ sec. 33, T. 45 N., R. 6 W., at highway bridge 1¼ miles southwest of Montague. Little Shasta River enters 1 mile above and Yreka Creek 5½ miles below the station.

RECORDS AVAILABLE.—August 24, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections; lower section fastened to bridge pier on right bank; upper section to left abutment.

CHANNEL.—Small bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

DIVERSIONS.—Water is diverted for irrigation and power above the station.

ACCURACY.—Rating curve fairly well defined; results good.

*Discharge measurements of Shasta River near Montague, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 25 | Lasley Lee | 3.20 | 235 | May 7 | G. H. Canfield | 3.11 | 182 |
| Feb. 13 | G. H. Canfield | 3.34 | 286 | June 24 | do | 3.06 | 159 |
| Apr. 1 | do | 3.39 | 290 | Sept. 3 | Lasley Lee | 2.95 | 117 |
| 8 | do | 3.40 | 291 | | | | |

*Daily gage height, in feet, of Shasta River near Montague, Cal., for the year ending Sept. 30, 1913.*

[Manuel Borba, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.9 | 3.0 | 3.2 | 3.3 | 3.3 | 3.3 | 3.4 | 3.35 | 3.2 | 3.3 | 3.2 | 3.0 |
| 2 | 3.0 | 3.0 | 3.2 | 3.3 | 3.4 | 3.3 | 3.4 | 3.35 | 3.2 | 3.2 | 3.2 | 3.0 |
| 3 | 3.0 | 3.0 | 3.2 | 3.3 | 3.4 | 3.3 | 3.35 | 3.35 | 3.2 | 3.2 | 3.1 | 3.0 |
| 4 | 3.0 | 3.0 | 3.2 | 3.3 | 3.4 | 3.3 | 3.4 | 3.3 | 3.1 | 3.0 | 3.1 | 3.0 |
| 5 | 3.0 | 3.0 | 3.2 | 3.1 | 3.4 | 3.3 | 3.4 | 3.3 | 3.1 | 3.0 | 3.1 | 3.0 |
| 6 | 3.0 | 3.5 | 3.1 | 3.1 | 3.4 | 3.3 | 3.7 | 3.3 | 3.1 | 2.9 | 3.0 | 3.0 |
| 7 | 3.0 | 3.7 | 3.1 | 3.0 | 3.4 | 3.3 | 3.4 | 3.1 | 3.5 | 2.8 | 3.0 | 3.0 |
| 8 | 3.0 | 3.7 | 3.1 | 3.0 | 3.4 | 3.3 | 3.4 | 3.3 | 3.3 | 2.85 | 3.0 | 2.95 |
| 9 | 2.9 | 3.7 | 3.1 | 3.1 | 3.4 | 3.3 | 3.35 | 3.3 | 3.5 | 2.85 | 3.0 | 2.9 |
| 10 | 2.9 | 3.7 | 3.1 | 3.1 | 3.4 | 3.3 | 3.3 | 3.45 | 3.4 | 2.8 | 3.0 | 2.9 |
| 11 | 2.9 | 3.6 | 3.1 | 3.1 | 3.4 | 3.3 | 3.25 | 3.5 | 3.3 | 2.8 | 3.0 | 2.9 |
| 12 | 2.9 | 3.6 | 3.1 | 3.1 | 3.35 | 3.3 | 3.25 | 3.5 | 3.2 | 2.8 | 3.0 | 2.9 |
| 13 | 2.9 | 3.6 | 3.1 | 3.1 | 3.35 | 3.4 | 3.3 | 3.4 | 3.2 | 2.8 | 3.0 | 2.9 |
| 14 | 2.9 | 3.4 | 3.3 | 3.7 | 3.35 | 3.5 | 3.8 | 3.4 | 3.1 | 2.8 | 3.0 | 2.9 |
| 15 | 2.9 | 3.4 | 3.5 | 4.0 | 3.35 | 3.5 | 3.7 | 3.4 | 3.1 | 2.8 | 3.0 | 2.9 |
| 16 | 2.9 | 3.4 | 3.5 | 3.8 | 3.35 | 3.4 | 3.5 | 3.4 | 3.0 | 2.8 | 3.0 | 2.9 |
| 17 | 2.9 | 3.3 | 3.4 | 3.5 | 3.35 | 3.35 | 3.4 | 3.7 | 2.9 | 2.8 | 2.9 | 2.9 |
| 18 | 2.9 | 3.3 | 3.4 | 3.8 | 3.35 | 3.3 | 3.4 | 3.6 | 2.9 | 2.8 | 2.9 | 2.9 |
| 19 | 2.9 | 3.3 | 3.4 | 4.3 | 3.35 | 3.3 | 3.4 | 3.6 | 3.2 | 2.8 | 2.9 | 2.9 |
| 20 | 2.9 | 3.3 | 3.4 | 3.8 | 3.35 | 3.3 | 3.5 | 3.5 | 3.1 | 2.8 | 2.9 | 2.9 |
| 21 | 2.85 | 3.3 | 3.4 | 3.5 | 3.35 | 3.3 | 3.5 | 3.5 | 3.1 | 2.8 | 2.9 | 2.9 |
| 22 | 2.95 | 3.3 | 3.4 | 3.4 | 3.35 | 3.3 | 3.4 | 3.35 | 3.0 | 2.7 | 2.9 | 2.9 |
| 23 | 3.0 | 3.3 | 3.4 | 3.4 | 3.35 | 3.3 | 3.4 | 3.35 | 3.0 | 2.7 | 2.9 | 2.9 |
| 24 | 2.95 | 3.2 | 3.4 | 3.3 | 3.35 | 3.3 | 3.4 | 3.4 | 3.0 | 3.5 | 2.9 | 2.9 |
| 25 | 2.9 | 3.2 | 3.4 | 3.3 | 3.3 | 3.25 | 3.4 | 3.4 | 3.0 | 3.5 | 2.9 | 2.9 |
| 26 | 3.0 | 3.2 | 3.4 | 3.3 | 3.3 | 3.25 | 3.4 | 3.4 | 3.1 | 3.5 | 2.9 | 2.9 |
| 27 | 3.0 | 3.2 | 3.2 | 3.3 | 3.3 | 3.25 | 3.4 | 3.4 | 3.7 | 3.4 | 2.9 | 2.9 |
| 28 | 3.0 | 3.2 | 3.1 | 3.3 | 3.3 | 3.2 | 3.4 | 3.6 | 3.5 | 3.4 | 2.9 | 2.9 |
| 29 | 3.0 | 3.2 | 3.1 | 3.3 | ..... | 3.2 | 3.35 | 3.5 | 3.4 | 3.2 | 3.0 | 2.9 |
| 30 | 3.0 | 3.2 | 3.3 | 3.3 | ..... | 3.3 | 3.35 | 3.5 | 3.3 | 3.2 | 3.0 | 2.95 |
| 31 | 3.0 | ..... | 3.3 | 3.3 | ..... | 3.3 | ..... | 3.2 | ..... | 3.2 | 3.0 | ..... |

*Daily discharge, in second-feet, of Shasta River near Montague, Cal., for the years ending Sept. 30, 1911–13.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 147 | 21 | 147 |
| 2 | ..... | 12 | 147 | 22 | 147 |
| 3 | 130 | 13 | 147 | 23 | 147 |
| 4 | 130 | 14 | 147 | 24 | 112 |
| 5 | 147 | 15 | 130 | 25 | 112 |
| 6 | 147 | 16 | 130 | 26 | 130 |
| 7 | 130 | 17 | 147 | 27 | 130 |
| 8 | 130 | 18 | 147 | 28 | 79 |
| 9 | 130 | 19 | 147 | 29 | 79 |
| 10 | 147 | 20 | 147 | 30 | 79 |
| | | | | 31 | ..... |

*Daily discharge, in second-feet, of Shasta River near Montague, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 96 | 167 | 227 | 207 | 180 | 140 | 72 | 570 | 283 | 180 | 88 | 41 |
| 2 | 112 | 167 | 227 | 187 | 180 | 122 | 72 | 390 | 262 | 180 | 88 | 41 |
| 3 | 112 | 187 | 227 | 187 | 180 | 122 | 72 | 390 | 262 | 180 | 88 | 72 |
| 4 | 112 | 187 | 227 | 187 | 180 | 122 | 72 | 304 | 262 | 140 | 140 | 105 |
| 5 | 112 | 187 | 227 | 187 | 160 | 140 | 72 | 304 | 262 | 105 | 140 | 105 |
| 6 | 112 | 187 | 227 | 187 | 160 | 262 | 72 | 292 | 140 | 72 | 72 | 346 |
| 7 | 112 | 187 | 227 | 187 | 160 | 262 | 72 | 280 | 140 | 72 | 72 | 390 |
| 8 | 112 | 187 | 227 | 227 | 160 | 262 | 72 | 268 | 140 | 72 | 72 | 390 |
| 9 | 147 | 187 | 227 | 290 | 180 | 180 | 72 | 256 | 304 | 41 | 72 | 325 |
| 10 | 167 | 187 | 227 | 290 | 180 | 160 | 72 | 244 | 220 | 41 | 72 | 220 |
| 11 | 147 | 207 | 227 | 290 | 180 | 180 | 72 | 232 | 220 | 41 | 72 | 140 |
| 12 | 147 | 207 | 227 | 269 | 180 | 160 | 72 | 220 | 220 | 41 | 72 | 180 |
| 13 | 147 | 207 | 227 | 269 | 160 | 180 | 88 | 180 | 220 | 72 | 72 | 180 |
| 14 | 147 | 207 | 227 | 269 | 160 | 180 | 88 | 180 | 220 | 72 | 72 | 140 |
| 15 | 147 | 207 | 227 | 290 | 160 | 180 | 105 | 180 | 220 | 72 | 72 | 140 |
| 16 | 147 | 207 | 227 | 269 | 262 | 180 | 105 | 180 | 140 | 72 | 72 | 140 |
| 17 | 147 | 207 | 227 | 269 | 434 | 180 | 72 | 140 | 140 | 72 | 72 | 140 |
| 18 | 147 | 227 | 227 | 269 | 570 | 180 | 72 | 180 | 140 | 88 | 72 | 140 |
| 19 | 147 | 207 | 227 | 269 | 390 | 180 | 72 | 220 | 72 | 72 | 56 | 105 |
| 20 | 147 | 227 | 227 | 269 | 220 | 160 | 72 | 262 | 72 | 72 | 56 | 105 |
| 21 | 147 | 207 | 207 | 227 | 220 | 160 | 72 | 346 | 140 | 105 | 41 | 88 |
| 22 | 147 | 207 | 227 | 227 | 180 | 140 | 72 | 390 | 220 | 105 | 41 | 88 |
| 23 | 147 | 227 | 227 | 227 | 180 | 160 | 72 | 346 | 346 | 122 | 41 | 88 |
| 24 | 147 | 227 | 227 | 227 | 160 | 140 | 105 | 304 | 478 | 122 | 41 | 88 |
| 25 | 147 | 227 | 227 | ..... | 140 | 140 | 105 | 283 | 390 | 88 | 41 | 88 |
| 26 | 167 | 227 | 227 | ..... | 140 | 140 | 105 | 262 | 220 | 88 | 41 | 105 |
| 27 | 167 | 227 | 227 | ..... | 140 | 105 | 72 | 262 | 283 | 88 | 41 | 105 |
| 28 | 167 | 227 | 227 | 262 | 140 | 105 | 105 | 283 | 140 | 72 | 41 | 105 |
| 29 | 167 | 227 | 207 | 262 | 140 | 105 | 304 | 283 | 140 | 72 | 41 | 105 |
| 30 | 167 | 227 | 207 | 220 | ..... | 88 | 434 | 283 | 180 | 72 | 56 | 105 |
| 31 | 167 | ..... | 207 | 220 | ..... | 72 | ..... | 283 | ..... | 72 | 56 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 105 | 140 | 220 | 262 | 262 | 262 | 304 | 283 | 220 | 262 | 220 | 140 |
| 2 | 140 | 140 | 220 | 262 | 304 | 262 | 304 | 283 | 220 | 220 | 220 | 140 |
| 3 | 140 | 140 | 220 | 262 | 304 | 262 | 283 | 283 | 220 | 220 | 180 | 140 |
| 4 | 140 | 140 | 220 | 262 | 304 | 262 | 304 | 262 | 180 | 140 | 180 | 140 |
| 5 | 140 | 140 | 220 | 180 | 304 | 262 | 304 | 262 | 180 | 140 | 180 | 140 |
| 6 | 140 | 346 | 180 | 180 | 304 | 262 | 434 | 262 | 180 | 105 | 140 | 140 |
| 7 | 140 | 434 | 180 | 140 | 304 | 262 | 304 | 180 | 346 | 72 | 140 | 140 |
| 8 | 140 | 434 | 180 | 140 | 304 | 262 | 304 | 262 | 262 | 88 | 140 | 122 |
| 9 | 105 | 434 | 180 | 180 | 304 | 262 | 283 | 262 | 346 | 88 | 140 | 105 |
| 10 | 105 | 434 | 180 | 180 | 304 | 262 | 262 | 325 | 304 | 72 | 140 | 105 |
| 11 | 105 | 390 | 180 | 180 | 304 | 262 | 241 | 346 | 262 | 72 | 140 | 105 |
| 12 | 105 | 390 | 180 | 180 | 283 | 262 | 241 | 346 | 220 | 72 | 140 | 105 |
| 13 | 105 | 390 | 180 | 180 | 283 | 304 | 262 | 304 | 220 | 72 | 140 | 105 |
| 14 | 105 | 304 | 262 | 434 | 283 | 346 | 478 | 304 | 180 | 72 | 140 | 105 |
| 15 | 105 | 304 | 346 | 570 | 283 | 346 | 434 | 304 | 180 | 72 | 140 | 105 |
| 16 | 105 | 304 | 346 | 478 | 283 | 304 | 346 | 304 | 140 | 72 | 140 | 105 |
| 17 | 105 | 262 | 304 | 346 | 283 | 283 | 304 | 434 | 105 | 72 | 105 | 105 |
| 18 | 105 | 262 | 304 | 478 | 283 | 262 | 304 | 390 | 105 | 72 | 105 | 105 |
| 19 | 105 | 262 | 304 | 712 | 283 | 262 | 304 | 390 | 220 | 72 | 105 | 105 |
| 20 | 105 | 262 | 304 | 478 | 283 | 262 | 346 | 346 | 180 | 72 | 105 | 105 |
| 21 | 88 | 262 | 304 | 346 | 283 | 262 | 346 | 346 | 180 | 72 | 105 | 105 |
| 22 | 122 | 262 | 304 | 304 | 283 | 262 | 304 | 283 | 140 | 41 | 105 | 105 |
| 23 | 140 | 262 | 304 | 304 | 283 | 262 | 304 | 283 | 140 | 41 | 105 | 105 |
| 24 | 122 | 220 | 304 | 262 | 283 | 262 | 304 | 304 | 140 | 346 | 105 | 105 |
| 25 | 105 | 220 | 304 | 262 | 262 | 241 | 304 | 304 | 140 | 346 | 105 | 105 |
| 26 | 140 | 220 | 304 | 262 | 262 | 241 | 304 | 304 | 180 | 346 | 105 | 105 |
| 27 | 140 | 220 | 220 | 262 | 262 | 241 | 304 | 304 | 434 | 304 | 105 | 105 |
| 28 | 140 | 220 | 180 | 262 | 262 | 220 | 304 | 390 | 346 | 304 | 105 | 105 |
| 29 | 140 | 220 | 180 | 262 | ..... | 220 | 283 | 346 | 304 | 220 | 140 | 105 |
| 30 | 140 | 220 | 262 | 262 | ..... | 262 | 283 | 346 | 262 | 220 | 140 | 122 |
| 31 | 140 | ..... | 262 | 262 | ..... | 262 | ..... | 220 | ..... | 220 | 140 | ..... |

NOTE.—Discharge determined from rating curves applicable as follows: Sept. 3, 1911, to Jan. 24, 1912, poorly defined; Jan. 28, 1912, to Sept. 30, 1913, fairly well defined. Discharge interpolated May 6–11, 1912. No estimates for the high-water period, Jan. 25–27, 1912, data unreliable.

*Monthly discharge of Shasta River near Montague, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 3-30 | 147 | 79 | 132 | 7,330 | C. |
| 1911 12. | | | | | |
| October | 167 | 96 | 142 | 8,730 | C. |
| November | 227 | 167 | 206 | 12,300 | C. |
| December | 227 | 207 | 224 | 13,800 | C. |
| February | 570 | 140 | 203 | 11,700 | C. |
| March | 262 | 72 | 158 | 9,720 | C. |
| April | 434 | 72 | 99.5 | 5,920 | C. |
| May | 570 | 140 | 277 | 17,000 | B. |
| June | 478 | 72 | 216 | 12,900 | B. |
| July | 180 | 41 | 89.1 | 5,480 | C. |
| August | 140 | 41 | 66.9 | 4,110 | C. |
| September | 390 | 41 | 147 | 8,750 | B. |
| 1912-13. | | | | | |
| October | 140 | 88 | 121 | 7,440 | C. |
| November | 434 | 140 | 260 | 15,500 | B. |
| December | 346 | 180 | 246 | 15,100 | B. |
| January | 712 | 140 | 295 | 18,100 | B. |
| February | 304 | 262 | 287 | 15,900 | B. |
| March | 346 | 220 | 266 | 16,400 | B. |
| April | 478 | 241 | 313 | 18,600 | B. |
| May | 434 | 180 | 308 | 18,900 | B. |
| June | 434 | 105 | 218 | 13,000 | B. |
| July | 346 | 41 | 148 | 9,100 | B. |
| August | 220 | 105 | 135 | 8,300 | B. |
| September | 140 | 105 | 114 | 6,780 | C. |
| The year | 712 | 41 | 226 | 169,000 | |

## EAST FORK OF SCOTT RIVER NEAR CALLAHAN, CAL.

LOCATION.—In sec. 18, T. 40 N., R. 7 W., in Shasta National Forest, about 500 feet west of W. Schneider's ranch house, and about 6 miles east of Callahan.

RECORDS AVAILABLE.—November 1, 1910, to May 28, 1913, when station was discontinued; fragmentary.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in three sections on left bank 25 feet above foot-log.

CHANNEL.—Gravel and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from foot-log below gage or by wading.

ACCURACY.—Rating curve well defined. Results good for periods for which gage heights were recorded.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of East Fork of Scott River near Callahan, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 15 | Lasley Lee | 3.38 | 32 | Sept. 9 | Lasley Lee | 2.79 | 2.2 |
| May 13 | G. H. Canfield | 3.80 | 85 | | | | |

*Daily gage height, in feet, and discharge, in second-feet, of East Fork of Scott River near Callahan, Cal., for the year ending Sept. 30, 1913.*

| Day. | May. | | Day. | May. | | Day. | May. | |
|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | | Gage height. | Discharge. | | Gage height. | Discharge. |
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | | |
| 1 | 3.6 | 56 | 11 | | | 21 | 4.0 | 130 |
| 2 | 3.6 | 56 | 12 | | | 22 | | |
| 3 | | | 13 | 3.8 | 88 | 23 | 4.0 | 130 |
| 4 | 3.7 | 71 | 14 | | | 24 | 4.1 | 155 |
| 5 | | | 15 | 3.8 | 88 | 25 | | |
| 6 | 3.8 | 88 | 16 | | | 26 | 4.15 | 168 |
| 7 | 3.9 | 108 | 17 | 3.9 | 108 | 27 | 4.2 | 180 |
| 8 | | | 18 | | | 28 | 4.3 | 205 |
| 9 | 4.0 | 130 | 19 | 3.9 | 108 | 29 | | |
| 10 | 4.1 | 155 | 20 | | | 30 | | |
| | | | | | | 31 | | |

NOTE.—Discharge determined from a well-defined rating curve.

## SCOTT RIVER AT CALLAHAN, CAL.

LOCATION.—In the NE. ¼ sec. 17, T. 40 N., R. 8 W., in Shasta National Forest, at highway bridge three-fourths mile below junction of East and South forks, and about a mile northwest of Callahan. Wildcat Creeks enters 500 feet above and Sugar Creek 1½ miles below station.

RECORDS AVAILABLE.—June 12, 1911, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on right bank established November 14, 1912; lower section fastened to alder tree 40 feet above bridge; upper section fastened to downstream end of bridge pier. Original gage was just above power house, about 2,000 feet above present location. Wildcat Creek enters between the two gages.

CHANNEL.—Gravel and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

ACCURACY.—Rating curve well defined: results good for periods for which gage heights were recorded.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Scott River at Callahan, Cal., during the years 1911–1913.*

**Gage 2,000 feet above bridge.**

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| 1912. | | *Feet.* | *Sec.-ft.* | 1913. | | *Feet.* | *Sec.-ft.* |
| Jan. 23 | H. J. Tompkins | 0.70 | 43 | May 13 | G. H. Canfield | 2.61 | 397 |
| Nov. 15 | Lasley Lee | 1.82 | 211 | Sept. 9 | Lasley Lee | .37 | 15 |

**Gage at bridge.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1911. | | | | 1912. | | | |
| Nov. 22 | F. G. Wood | [a] 2.76 | 63 | Nov. 15 | Lasley Lee | 3.08 | 220 |
| Apr. 10 | G. T. Peekema | [a] 3.53 | 372 | | | | |
| May 30 | ....do | [a] 3.94 | 575 | 1913. | | | |
| Sept. 20 | ....do | [a] 2.17 | 17 | May 13 | G. H. Canfield | 3.59 | 408 |
| | | | | Sept. 9 | Lasley Lee | 2.08 | 19 |
| 1912. | | | | | | | |
| Jan. 23 | H. J. Tompkins | | [b] 43 | | | | |

[a] Measurements taken at bridge and reduced to datum of gage installed at bridge Nov. 15, 1912.
[b] Wildcat Creek dry.

*Daily gage height, in feet, and discharge, in second-feet, of Scott River at Callahan, Cal., for the year ending Sept. 30, 1913.*

**Gage 2,000 feet above bridge.**

[F. P. Cunningham and F. H. Williams, observers.]

| Day. | October. | | November. | | April. | | May. | |
|---|---|---|---|---|---|---|---|---|
| | Gage height | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | | | | | 2.0 | 248 |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | 0.6 | 34 | | | 2.7 | 421 |
| 5 | 0.5 | 25 | | | | | 2.8 | 448 |
| 6 | | | 2.9 | 475 | | | | |
| 7 | | | 1.6 | 169 | | | 3.2 | 560 |
| 8 | | | | | | | 3.4 | 619 |
| 9 | | | 3.7 | 710 | | | | |
| 10 | | | | | | | | |
| 11 | .5 | 25 | 1.9 | 227 | | | | |
| 12 | | | | | | | 2.8 | 448 |
| 13 | | | | | | | 2.6 | 394 |
| 14 | | | 2.15 | 282 | | | | |
| 15 | | | 1.8 | 207 | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | 2.25 | 305 | | |
| 24 | | | | | 2.4 | 342 | | |
| 25 | | | | | 2.3 | 317 | | |
| 26 | | | | | | | | |
| 27 | | | | | 2.7 | 421 | | |
| 28 | | | | | | | | |
| 29 | | | | | 2.6 | 394 | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |

*Daily gage height, in feet, and discharge, in second-feet, of Scott River at Callahan, Cal., for the year ending Sept. 30, 1913*—Continued.

**Gage at bridge.**

| Day. | Nov. | | Dec. | | May. | | June. | | July. | | Aug. | | Sept. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. | Gage height. | Discharge. |
| 1 | | | | | | | | | 2.98 | 191 | | | | |
| 2 | | | | | | | 3.8 | 501 | | | 2.45 | 70 | 2.3 | 45 |
| 3 | | | | | | | 4.0 | 608 | | | | | | |
| 4 | | | | | | | 3.9 | 553 | 2.95 | 183 | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | 3.7 | 453 | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | 3.55 | 386 | 2.9 | 169 | 2.40 | 61 | 2.08 | 19 |
| 10 | | | | | | | 3.5 | 365 | | | | | | |
| 11 | | | | | | | 3.48 | 367 | | | | | | |
| 12 | | | | | | | | | 2.87 | 161 | | | | |
| 13 | | | 2.50 | 79 | 3.6 | 407 | | | | | | | | |
| 14 | 3.32 | 297 | | | 3.5 | 365 | 3.40 | 326 | | | | | 2.05 | 16 |
| 15 | 3.08 | 220 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | 2.75 | 132 | 3.7 | 453 | | | 2.73 | 127 | | | 2.03 | 14 |
| 19 | | | | | | | 3.35 | 308 | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | 4.0 | 608 | | | | | | | | |
| 22 | | | | | | | 3.32 | 297 | | | 2.37 | 56 | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | 3.30 | 290 | | | 2.36 | 55 | | |
| 25 | | | | | | | | | 2.6 | 99 | 2.36 | 55 | 2.0 | 11 |
| 26 | | | | | | | | | | | 2.35 | 53 | | |
| 27 | | | | | 3.75 | 477 | 3.20 | 257 | | | | | | |
| 28 | | | | | 3.8 | 501 | | | | | | | 2.0 | 11 |
| 29 | | | | | | | 3.00 | 197 | | | 2.35 | 53 | | |
| 30 | | | | | 3.85 | 527 | | | | | | | | |
| 31 | | | | | 3.7 | 453 | | | 2.5 | 79 | | | | |

NOTE.—Daily discharge determined from a well-defined rating curve.

*Daily discharge, in second-feet, of Scott River at Callahan, Cal., for the year ending Sept. 30, 1912.*

[Gage 2,000 feet above bridge.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 25 | | 110 | 118 | | | | | | |
| 2 | | 14 | | | | | 118 | | | | | |
| 3 | | | | | | | | | | 151 | | |
| 4 | | | 25 | | | | | | | | | |
| 5 | | | | | | | 103 | | | | 43 | |
| 6 | 17 | | | | 110 | | | | | | | |
| 7 | | 14 | | 25 | | 188 | | | | | | |
| 8 | | | 25 | | 118 | | | | | | | 89 |
| 9 | | | | | | | 134 | 394 | | | | |
| 10 | 21 | 17 | | | | | | | | | | |
| 11 | | | 25 | 151 | | | | | | | | |
| 12 | | | | | | | 198 | | | | | 34 |
| 13 | | | | | 118 | 118 | | | | | | |
| 14 | | 14 | | | | | 188 | 475 | | | | |
| 15 | | | 21 | 76 | | 118 | | | | 103 | 34 | |
| 16 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | 17 | 14 | | | | | | 475 | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | 34 | | 43 | | 118 | | | | | | |
| 23 | | | | 43 | | | | | | 76 | | |
| 24 | | | | | | | | 448 | | | | |
| 25 | | | | 531 | | | | | | | | |
| 26 | | | | | | 118 | | | | | | |
| 27 | | | | | 118 | | | | | | | |
| 28 | 17 | | | | | | | | | | 25 | |
| 29 | | | | | | | | | | 43 | | |
| 30 | | | | 110 | | | 207 | | 151 | | | |
| 31 | 17 | | | | | 126 | | 503 | | | | |

NOTE.—Daily discharge determined from a well-defined rating curve.

## SCOTT RIVER NEAR SCOTT BAR, CAL.

LOCATION.—In the NW. ¼ sec. 6, T. 45 N., R. 10 W., at highway bridge 2½ miles northwest of Scott Bar and about half a mile above junction with Klamath River.

RECORDS AVAILABLE.—September 12, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections fastened to left abutment of bridge.

CHANNEL.—Bowlders and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridges at Scott Bar and at gage or by wading.

DIVERSIONS.—Water is diverted for use in mining and irrigation above the station.

ACCURACY.—Rating curves fairly well defined; results good. Changes in channel indicated by the discharge measurements due to mining operations above station.

*Discharge measurements of Scott River near Scott Bar, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 24 | Lasley Lee | 2.88 | 451 | May 9 | G. H. Canfield | 4.28 | 2,160 |
| Feb. 15 | G. H. Canfield | 3.03 | 682 | June 23 | do | 3.33 | 989 |
| Apr. 3 | do | 3.46 | 1,210 | Sept. 7 | Lasley Lee | 2.13 | 154 |
| 7 | do | 3.46 | 1,200 | | | | |

*Daily gage height, in feet, of Scott River near Scott Bar, Cal., for the year ending Sept. 30, 1913.*

[G. A. Milne, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.30 | 2.45 | 2.75 | 3.1 | 2.88 | 2.95 | 3.5 | 3.6 | 4.4 | 3.2 | 2.50 | 2.10 |
| 2 | 2.30 | 2.45 | 2.75 | 3.1 | 2.90 | 2.95 | 3.5 | 3.55 | 4.5 | 3.05 | 2.50 | 2.10 |
| 3 | 2.30 | 2.45 | 2.75 | 3.0 | 2.90 | 2.95 | 3.5 | 3.5 | 4.5 | 3.0 | 2.50 | 2.20 |
| 4 | 2.30 | 2.45 | 2.75 | 2.92 | 2.90 | 3.0 | 3.45 | 3.45 | 4.6 | 2.90 | 2.45 | 2.20 |
| 5 | 2.30 | 2.55 | 2.75 | 2.85 | 2.90 | 3.1 | 3.6 | 3.6 | 4.5 | 2.95 | 2.40 | 2.20 |
| 6 | 2.30 | 3.9 | 2.75 | 2.80 | 2.90 | 3.2 | 3.6 | 3.8 | 4.5 | 2.80 | 2.35 | 2.15 |
| 7 | 2.30 | 3.7 | 2.72 | 2.80 | 2.90 | 3.25 | 3.5 | 4.0 | 4.4 | 2.80 | 2.30 | 2.10 |
| 8 | 2.30 | 3.35 | 2.70 | 2.82 | 2.90 | 3.3 | 3.4 | 4.1 | 4.3 | 2.70 | 2.30 | 2.10 |
| 9 | 2.30 | 3.45 | 2.70 | 2.82 | 2.92 | 3.3 | 3.4 | 4.3 | 4.2 | 2.65 | 2.30 | 2.10 |
| 10 | 2.30 | 3.45 | 2.70 | 2.80 | 2.95 | 3.4 | 3.45 | 4.3 | 4.2 | 2.65 | 2.25 | 2.10 |
| 11 | 2.30 | 3.35 | 2.70 | 2.80 | 2.95 | 3.5 | 3.55 | 4.2 | 4.0 | 2.60 | 2.25 | 2.05 |
| 12 | 2.30 | 3.3 | 2.70 | 2.80 | 2.98 | 3.45 | 3.75 | 4.0 | 3.9 | 2.60 | 2.22 | 2.05 |
| 13 | 2.30 | 3.25 | 2.72 | 2.82 | 2.98 | 3.4 | 3.8 | 4.0 | 3.75 | 2.60 | 2.20 | 2.00 |
| 14 | 2.30 | 3.6 | 2.95 | 2.85 | 3.0 | 3.35 | 3.7 | 3.9 | 3.6 | 2.55 | 2.20 | 2.00 |
| 15 | 2.30 | 3.35 | 3.3 | 2.88 | 3.0 | 3.3 | 3.6 | 3.9 | 3.5 | 2.50 | 2.20 | 2.00 |
| 16 | 2.30 | 3.25 | 3.2 | 2.90 | 3.1 | 3.3 | 3.6 | 3.95 | 3.45 | 2.50 | 2.20 | 2.00 |
| 17 | 2.30 | 3.15 | 3.2 | 2.90 | 3.1 | 3.35 | 3.6 | 4.1 | 3.4 | 2.50 | 2.20 | 1.95 |
| 18 | 2.30 | 3.1 | 3.1 | 3.0 | 3.2 | 3.35 | 3.6 | 4.2 | 3.3 | 2.45 | 2.15 | 1.95 |
| 19 | 2.30 | 3.0 | 3.1 | 3.2 | 3.2 | 3.3 | 3.7 | 4.3 | 3.3 | 2.45 | 2.15 | 1.90 |
| 20 | 2.30 | 3.0 | 3.0 | 3.1 | 3.2 | 3.3 | 3.6 | 4.3 | 3.3 | 2.40 | 2.10 | 1.85 |
| 21 | 2.30 | 3.0 | 2.95 | 3.1 | 3.1 | 3.3 | 3.65 | 4.3 | 3.3 | 2.40 | 2.10 | 1.90 |
| 22 | 2.50 | 2.90 | 2.90 | 3.05 | 3.1 | 3.3 | 3.7 | 4.4 | 3.4 | 2.40 | 2.10 | 1.90 |
| 23 | 2.42 | 2.90 | 2.90 | 3.0 | 3.1 | 3.3 | 3.7 | 4.4 | 3.4 | 2.40 | 2.10 | 1.90 |
| 24 | 2.42 | 2.88 | 2.90 | 2.95 | 3.05 | 3.2 | 3.8 | 4.5 | 3.3 | 3.2 | 2.10 | 1.85 |
| 25 | 2.48 | 2.85 | 2.88 | 2.90 | 3.0 | 3.2 | 3.9 | 4.5 | 3.25 | 2.90 | 2.10 | 1.85 |
| 26 | 2.48 | 2.80 | 2.88 | 2.90 | 3.0 | 3.2 | 3.95 | 4.6 | 3.2 | 2.70 | 2.10 | 1.85 |
| 27 | 2.45 | 2.80 | 2.88 | 2.90 | 3.0 | 3.15 | 4.0 | 4.6 | 3.3 | 2.60 | 2.10 | 1.85 |
| 28 | 2.42 | 2.80 | 2.88 | 2.90 | 2.98 | 3.15 | 4.0 | 4.6 | 3.25 | 2.60 | 2.10 | 1.85 |
| 29 | 2.42 | 2.78 | 2.85 | 2.88 | ..... | 3.2 | 3.9 | 4.3 | 3.25 | 2.55 | 2.20 | 1.90 |
| 30 | 2.45 | 2.78 | 3.0 | 2.88 | ..... | 3.3 | 3.7 | 4.2 | 3.2 | 2.55 | 2.20 | 1.90 |
| 31 | 2.45 | ..... | 3.2 | 2.88 | ..... | 3.35 | ..... | 4.3 | ..... | 2.55 | 2.20 | ..... |

*Daily discharge, in second-feet, of Scott River near Scott Bar, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 370 | 465 | 369 | 770 | 591 | 646 | 1,170 | 1,290 | 2,330 | 860 | 339 | 142 |
| 2 | 370 | 465 | 369 | 770 | 606 | 646 | 1,170 | 1,230 | 2,470 | 728 | 339 | 142 |
| 3 | 370 | 465 | 369 | 685 | 606 | 646 | 1,170 | 1,170 | 2,470 | 685 | 339 | 183 |
| 4 | 370 | 465 | 369 | 622 | 606 | 685 | 1,120 | 1,120 | 2,610 | 606 | 310 | 183 |
| 5 | 370 | 535 | 369 | 569 | 606 | 770 | 1,290 | 1,290 | 2,470 | 646 | 282 | 183 |
| 6 | 370 | 1,410 | 369 | 532 | 606 | 860 | 1,290 | 1,530 | 2,470 | 532 | 256 | 162 |
| 7 | 370 | 1,170 | 351 | 532 | 606 | 910 | 1,170 | 1,790 | 2,330 | 532 | 230 | 142 |
| 8 | 370 | 815 | 339 | 547 | 606 | 960 | 1,060 | 1,920 | 2,190 | 463 | 230 | 142 |
| 9 | 370 | 910 | 339 | 547 | 622 | 960 | 1,060 | 2,190 | 2,050 | 431 | 230 | 142 |
| 10 | 370 | 910 | 339 | 532 | 646 | 1,060 | 1,120 | 2,190 | 2,050 | 431 | 206 | 142 |
| 11 | 370 | 815 | 339 | 532 | 646 | 1,170 | 1,230 | 2,050 | 1,790 | 399 | 206 | 124 |
| 12 | 370 | 770 | 339 | 532 | 669 | 1,120 | 1,470 | 1,790 | 1,660 | 399 | 192 | 124 |
| 13 | 370 | 728 | 351 | 547 | 669 | 1,060 | 1,530 | 1,790 | 1,470 | 399 | 183 | 107 |
| 14 | 370 | 1,060 | 498 | 569 | 685 | 1,010 | 1,410 | 1,660 | 1,290 | 369 | 183 | 107 |
| 15 | 370 | 815 | 770 | 591 | 685 | 960 | 1,290 | 1,660 | 1,170 | 339 | 183 | 107 |
| 16 | 370 | 728 | 860 | 606 | 770 | 960 | 1,290 | 1,720 | 1,120 | 339 | 183 | 107 |
| 17 | 370 | 646 | 860 | 606 | 770 | 1,010 | 1,290 | 1,920 | 1,060 | 339 | 183 | 92 |
| 18 | 370 | 606 | 770 | 685 | 860 | 1,010 | 1,290 | 2,050 | 960 | 310 | 162 | 92 |
| 19 | 370 | 532 | 770 | 860 | 860 | 960 | 1,410 | 2,190 | 960 | 310 | 162 | 77 |
| 20 | 370 | 532 | 685 | 770 | 860 | 960 | 1,290 | 2,190 | 960 | 282 | 142 | 64 |
| 21 | 370 | 532 | 646 | 770 | 770 | 960 | 1,350 | 2,190 | 960 | 282 | 142 | 77 |
| 22 | 500 | 463 | 606 | 728 | 770 | 960 | 1,410 | 2,330 | 1,060 | 282 | 142 | 77 |
| 23 | 444 | 463 | 606 | 685 | 770 | 960 | 1,410 | 2,330 | 1,060 | 282 | 142 | 77 |
| 24 | 444 | 455 | 606 | 646 | 728 | 860 | 1,530 | 2,470 | 960 | 860 | 142 | 64 |
| 25 | 486 | 431 | 591 | 606 | 685 | 860 | 1,660 | 2,470 | 910 | 606 | 142 | 64 |
| 26 | 486 | 399 | 591 | 606 | 685 | 860 | 1,720 | 2,610 | 860 | 463 | 142 | 64 |
| 27 | 465 | 399 | 591 | 606 | 685 | 815 | 1,790 | 2,610 | 960 | 399 | 142 | 64 |
| 28 | 444 | 399 | 591 | 606 | 669 | 815 | 1,790 | 2,610 | 910 | 399 | 142 | 64 |
| 29 | 444 | 387 | 569 | 591 | ..... | 860 | 1,660 | 2,190 | 910 | 369 | 183 | 77 |
| 30 | 465 | 387 | 685 | 591 | ..... | 960 | 1,410 | 2,050 | 860 | 369 | 183 | 77 |
| 31 | 465 | ..... | 860 | 591 | ..... | 1,010 | ..... | 2,190 | ..... | 369 | 183 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1 to Nov. 5, 1912, well defined, same as used for 1911 to Sept. 30, 1912; Nov. 6 to Dec. 15, 1912, poorly defined; Dec. 16, 1912, to Sept. 30, 1913, fairly well defined.

*Monthly discharge of Scott River near Scott Bar, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 500 | 370 | 400 | 24,600 | B. |
| November | 1,410 | 387 | 639 | 38,000 | C. |
| December | 860 | 339 | 541 | 33,300 | C. |
| January | 860 | 532 | 627 | 38,600 | C. |
| February | 860 | 591 | 691 | 38,400 | B. |
| March | 1,170 | 646 | 912 | 56,100 | B. |
| April | 1,790 | 1,060 | 1,360 | 80,900 | B. |
| May | 2,610 | 1,120 | 1,960 | 121,000 | B. |
| June | 2,610 | 860 | 1,510 | 89,800 | B. |
| July | 860 | 282 | 454 | 27,900 | B. |
| August | 339 | 142 | 201 | 12,400 | B. |
| September | 183 | 64 | 109 | 6,490 | C. |
| The year | 2,610 | 64 | 783 | 567,000 | |

## INDIAN CREEK NEAR HAPPY CAMP, CAL.

LOCATION.—In the NW. ¼ sec. 22, T. 17 N., R. 7 E., in Klamath National Forest, at highway bridge at Robert's ranch, and about 4¾ miles north of Happy Camp and junction with Klamath River.

RECORDS AVAILABLE.—September 8, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to alder tree on left bank, about 700 feet above bridge. November 20, 1912, new gage in three sections, at an independent datum, was installed at bridge. No. 1 is vertical and fastened to stump on right bank 2 feet above bridge; No. 2 is vertical and fastened to right abutment of bridge near downstream end; No. 3 is inclined and fastened to alder tree on left bank 12 feet below bridge.

CHANNEL.—Small bowlders and gravel; permanent.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

DIVERSIONS.—The Reeve Davis Consolidated Mining Co.'s ditch diverts water above and returns it to the stream below the station; other small ditches use water for mining purposes.

ACCURACY.—Rating curves well defined, except for high water; results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Indian Creek near Happy Camp, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height (old gage). | Gage height (gage at bridge). | Discharge. | Date. | Made by— | Gage height (old gage). | Gage height (gage at bridge). | Discharge. |
|---|---|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Nov. 19 | Lasley Lee | 3.91 | 4.51 | 470 | May 10 | G. H. Canfield | 5.07 | 5.68 | 1,260 |
| Feb. 19 | G. H. Canfield | 4.00 | 4.64 | 531 | June 13 | do | 3.67 | 4.10 | 338 |
| Apr. 4 | do | | 5.38 | 1,020 | 13 | do | 3.66 | 4.08 | 332 |
| 5 | do | 4.90 | 5.51 | 1,140 | Sept. 6 | Lasley Lee | 2.94 | 3.16 | 84 |

*Daily gage height, in feet, of Indian Creek near Happy Camp, Cal., for the year ending Sept. 30, 1913.*

[M. M. Morgan, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 4.1 | 3.7 | | | | | 3.6 | | |
| 2 | | 3.1 | 3.35 | 4.0 | | | | | | 3.5 | | |
| 3 | | | | | | 4.1 | | | | 3.9 | | |
| 4 | | | | 3.8 | | | 5.4 | | | | | 3.3 |
| 5 | 2.7 | 4.0 | | | | | 5.5 | | | | 2.9 | |
| 6 | | 5.8 | | 3.7 | | | | | 4.6 | | 2.8 | 2.94 |
| 7 | | 4.6 | | | 3.7 | | | | 4.5 | | | |
| 8 | | | 3.3 | | | | | | 4.35 | | | |
| 9 | | 6.7 | | | | | | | 4.1 | | | |
| 10 | 2.6 | 4.8 | | 3.65 | | | | 5.7 | | | | |
| 11 | | | 3.2 | | 3.8 | | | | | 3.3 | | 2.8 |
| 12 | | | 3.35 | 3.6 | | | 5.6 | | | 2.7 | | |
| 13 | | 4.5 | | 3.7 | | | | | 4.1 | | | |
| 14 | 2.65 | | 4.0 | | | | | | | 3.25 | | |
| 15 | | | | 3.7 | | | | 4.9 | | | | |
| 16 | 2.65 | | | | | | | | | | | |
| 17 | | | 4.5 | | | | | | | | | |
| 18 | | | | | | 3.9 | | 5.1 | | | 2.7 | |
| 19 | | 3.9 | | 3.95 | 4.0 | | | 4.9 | | | | 2.65 |
| 20 | | 3.8 | | | | | | 4.9 | | | | |
| 21 | | 3.75 | | | | | | | | | | |
| 22 | | | | 3.7 | | | | | 4.0 | | | |
| 23 | 3.15 | 3.6 | 3.7 | | | | | | | 3.2 | 2.65 | 2.65 |
| 24 | 2.95 | | | | | | | | | | | |
| 25 | | 3.5 | | | | | | | 3.8 | | | |
| 26 | 3.15 | | | | 3.65 | | 4.5 | | | | | |
| 27 | | | | 3.6 | | 4.2 | | | | | | |
| 28 | | | | | 3.6 | | 4.9 | | | | | |
| 29 | | | | | | | | | 3.7 | | | |
| 30 | 3.0 | 3.4 | | | | 5.3 | | | | | 2.75 | |
| 31 | 3.05 | | 4.4 | 3.6 | | | | | | 3.1 | | |

NOTE.—Gage heights Mar. 27 to July 31 taken on new gage at bridge; rest of year on old gage. Maximum recorded gage height Nov. 6, 1912, 6.80 feet on old gage: at 10.15 a. m.

*Daily discharge, in second-feet, of Indian Creek near Happy Camp, Cal., for the years ending Sept. 30, 1911–13.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | | 11 | 38 | 21 | 30 |
| 2 | | 12 | 48 | 22 | 30 |
| 3 | | 13 | 38 | 23 | 30 |
| 4 | | 14 | 38 | 24 | 26 |
| 5 | | 15 | 38 | 25 | 38 |
| 6 | | 16 | 38 | 26 | 38 |
| 7 | | 17 | 38 | 27 | 38 |
| 8 | 38 | 18 | 38 | 28 | 38 |
| 9 | 38 | 19 | 34 | 29 | 38 |
| 10 | 38 | 20 | 32 | 30 | 34 |
| | | | | 31 | |

*Daily discharge, in second-feet, of Indian Creek near Happy Camp, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 34 | 33 | 48 | 57 | 705 | 520 | 405 | 1,380 | 610 | 150 | 62 | 56 |
| 2 | 30 | 32 | 43 | 62 | 640 | 520 | 405 | 915 | 705 | 141 | 62 | 62 |
| 3 | 34 | 32 | 38 | 55 | 580 | 520 | 405 | 740 | 550 | 132 | 62 | 62 |
| 4 | 38 | 31 | 38 | 48 | 740 | 405 | 405 | 722 | 550 | 123 | 62 | 62 |
| 5 | 38 | 31 | 150 | 55 | 1,300 | 460 | 405 | 705 | 550 | 123 | 55 | 62 |
| 6 | 38 | 30 | 305 | 62 | 990 | 460 | 405 | 845 | 550 | 123 | 55 | 182 |
| 7 | 30 | 30 | 220 | 100 | 1,060 | 460 | 405 | 1,100 | 550 | 123 | 52 | 145 |
| 8 | 48 | 50 | 155 | 460 | 1,460 | 405 | 380 | 1,220 | 478 | 123 | 48 | 100 |
| 9 | 38 | 90 | 80 | 355 | 1,640 | 405 | 388 | 1,220 | 405 | 118 | 48 | 70 |
| 10 | 38 | 62 | 71 | 640 | 1,720 | 460 | 397 | 1,060 | 355 | 112 | 48 | 62 |
| 11 | 38 | 72 | 62 | 460 | 1,540 | 405 | 405 | 988 | 305 | 96 | 48 | 57 |
| 12 | 38 | 81 | 48 | 2,720 | 1,220 | 405 | 355 | 915 | 298 | 80 | 48 | 52 |
| 13 | 43 | 90 | 48 | 2,720 | 1,140 | 405 | 405 | 898 | 290 | 100 | 43 | 48 |
| 14 | 48 | 100 | 48 | 1,820 | 915 | 580 | 330 | 880 | 282 | 90 | 43 | 43 |
| 15 | 43 | 775 | 48 | 1,720 | 845 | 640 | 305 | 810 | 275 | 80 | 43 | 46 |
| 16 | 38 | 305 | 55 | 880 | 3,830 | 640 | 302 | 740 | 268 | 80 | 43 | 49 |
| 17 | 38 | 182 | 62 | 610 | 8,430 | 580 | 298 | 740 | 260 | 80 | 43 | 52 |
| 18 | 38 | 166 | 57 | 705 | 4,240 | 520 | 295 | 740 | 260 | 80 | 43 | 55 |
| 19 | 38 | 149 | 52 | 640 | 2,400 | 520 | 292 | 700 | 260 | 80 | 43 | 46 |
| 20 | 34 | 133 | 48 | 640 | 1,640 | 520 | 289 | 660 | 260 | 80 | 43 | 38 |
| 21 | 30 | 116 | 48 | 580 | 1,460 | 405 | 285 | 620 | 260 | 78 | 43 | 40 |
| 22 | 30 | 100 | 48 | 520 | 1,380 | 405 | 282 | 580 | 239 | 76 | 43 | 43 |
| 23 | 30 | 100 | 55 | 520 | 1,060 | 405 | 290 | 580 | 218 | 73 | 40 | 46 |
| 24 | 30 | 100 | 62 | 2,950 | 705 | 460 | 297 | 580 | 218 | 71 | 38 | 48 |
| 25 | 30 | 100 | 55 | 3,700 | 640 | 460 | 305 | 580 | 218 | 70 | 38 | 48 |
| 26 | 32 | 100 | 48 | 2,100 | 640 | 460 | 305 | 580 | 218 | 68 | 48 | 48 |
| 27 | 34 | 100 | 55 | 1,380 | 640 | 405 | 355 | 595 | 200 | 66 | 45 | 48 |
| 28 | 34 | 100 | 62 | 1,060 | 580 | 460 | 405 | 610 | 182 | 65 | 42 | 48 |
| 29 | 34 | 81 | 55 | 915 | 520 | 520 | 640 | 705 | 182 | 64 | 38 | 62 |
| 30 | 34 | 62 | 48 | 640 | ..... | 520 | 915 | 642 | 166 | 62 | 44 | 55 |
| 31 | 33 | ..... | 52 | 705 | ..... | 462 | ..... | 580 | ..... | 62 | 50 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | ..... | ..... | ..... | 580 | 355 | ..... | ..... | ..... | ..... | 180 | 75 | ..... |
| 2 | ..... | 123 | 200 | 520 | ..... | ..... | ..... | ..... | ..... | 155 | ..... | ..... |
| 3 | ..... | ..... | ..... | ..... | ..... | 580 | ..... | ..... | ..... | 265 | 60 | ..... |
| 4 | ..... | ..... | ..... | 405 | ..... | ..... | 1,020 | ..... | ..... | ..... | ..... | 182 |
| 5 | 48 | 520 | ..... | ..... | ..... | ..... | 1,100 | ..... | ..... | ..... | 80 | ..... |
| 6 | ..... | 1,910 | ..... | 355 | ..... | ..... | ..... | ..... | 515 | ..... | 62 | 88 |
| 7 | ..... | 915 | ..... | ..... | 355 | ..... | ..... | ..... | 470 | ..... | ..... | ..... |
| 8 | ..... | ..... | 182 | ..... | ..... | ..... | ..... | ..... | 412 | ..... | ..... | ..... |
| 9 | ..... | 2,830 | ..... | ..... | ..... | ..... | ..... | ..... | 325 | ..... | ..... | ..... |
| 10 | 38 | 1,060 | ..... | 330 | ..... | ..... | ..... | 1,280 | ..... | ..... | ..... | ..... |
| 11 | ..... | ..... | 150 | ..... | 405 | ..... | ..... | ..... | ..... | 110 | ..... | 62 |
| 12 | ..... | ..... | 200 | 305 | ..... | ..... | 1,200 | ..... | ..... | ..... | 48 | ..... |
| 13 | ..... | 845 | ..... | 355 | ..... | ..... | ..... | ..... | 325 | ..... | ..... | ..... |
| 14 | 43 | ..... | 520 | ..... | 470 | ..... | ..... | ..... | ..... | 100 | ..... | ..... |
| 15 | ..... | ..... | ..... | 355 | ..... | ..... | ..... | 675 | ..... | ..... | ..... | ..... |
| 16 | 43 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 17 | ..... | ..... | 845 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 18 | ..... | ..... | ..... | ..... | ..... | 460 | ..... | 800 | ..... | ..... | 48 | ..... |
| 19 | ..... | 460 | ..... | 490 | 520 | ..... | ..... | 675 | ..... | ..... | ..... | 43 |
| 20 | ..... | 405 | ..... | ..... | ..... | ..... | ..... | 675 | ..... | ..... | ..... | ..... |
| 21 | ..... | 380 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 22 | ..... | ..... | ..... | 355 | ..... | ..... | ..... | ..... | 295 | ..... | ..... | ..... |
| 23 | 136 | 305 | 355 | ..... | ..... | ..... | ..... | ..... | ..... | 90 | 43 | 43 |
| 24 | 90 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 25 | ..... | 260 | ..... | ..... | ..... | ..... | ..... | ..... | 235 | ..... | ..... | ..... |
| 26 | 136 | ..... | ..... | ..... | 330 | ..... | 470 | ..... | ..... | ..... | ..... | ..... |
| 27 | ..... | ..... | ..... | 305 | ..... | 360 | ..... | ..... | ..... | ..... | ..... | ..... |
| 28 | ..... | ..... | ..... | ..... | 305 | ..... | 675 | ..... | ..... | ..... | ..... | ..... |
| 29 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 205 | ..... | ..... | ..... |
| 30 | 100 | 218 | ..... | ..... | ..... | 945 | ..... | ..... | ..... | ..... | 55 | ..... |
| 31 | 112 | ..... | 775 | 305 | ..... | ..... | ..... | ..... | ..... | 75 | ..... | ..... |

NOTE.—Discharge, when old gage was read, determined from a well-defined rating curve below 2,000 second-feet. For days on which gage was not read during period Sept. 8, 1911, to Sept. 30, 1912, discharge interpolated or estimated by comparison of records at this station with those for Salmon River at Somesbar. Discharge, when new gage was read, determined from a well-defined rating curve.

*Monthly discharge of Indian Creek near Happy Camp, Cal., for the years ending Sept. 30, 1911–12.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 8–30 | 48 | 26 | 36.3 | 1,660 | B. |
| 1911–12. | | | | | |
| October | 48 | 30 | 35.9 | 2,210 | B. |
| November | 775 | 30 | 114 | 6,780 | C. |
| December | 305 | 38 | 73.0 | 4,490 | C |
| January | 3,700 | 48 | 964 | 59,300 | B. |
| February | 8,430 | 520 | 1,600 | 88,900 | B. |
| March | 640 | 405 | 477 | 29,300 | A. |
| April | 915 | 282 | 378 | 22,500 | B. |
| May | 1,380 | 580 | 795 | 48,900 | A. |
| June | 705 | 166 | 339 | 20,200 | A. |
| July | 150 | 62 | 92.5 | 5,690 | B. |
| August | 62 | 38 | 47.2 | 2,900 | B. |
| September | 182 | 38 | 61.2 | 3,640 | B. |
| The year | 8,430 | 30 | 407 | 295,000 | |

## REEVE DAVIS FLUME NEAR HAPPY CAMP, CAL.

LOCATION.—In the SE. ¼ sec. 16, T. 17 N., R. 7 E., in flume, 2,000 feet northwest of highway bridge over Indian Creek at Roberts ranch, in Klamath National Forest, and about 4¾ miles north of Happy Camp.

RECORDS AVAILABLE.—September 8, 1911, to September 30, 1913 (fragmentary).

GAGE.—Gage height obtained by measurements from reference point on floor of flume. The datum has never been changed.

DISCHARGE MEASUREMENTS.—Made from foot-plank at reference point.

ACCURACY.—Rating curve well defined; results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Reeve Davis flume near Happy Camp, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Nov. 19 | Lasley Lee | 0.92 | 13 | June 13 | G. H. Canfield | 1.72 | 39 |
| Feb. 20 | G. H. Canfield | 1.42 | 29 | Sept. 6 | Lasley Lee | .48 | 3.4 |
| Apr. 4 | do | 1.83 | 43 | | | | |

*Daily gage height, in feet, of Reeve Davis flume near Happy Camp, Cal., for the year ending Sept. 30, 1913.*

[M. M. Morgan, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | 1.8 | | |
| 2 | | 1.60 | | | | | | | | | |
| 3 | | | | | | | | | 1.85 | | |
| 4 | | | | | | 1.85 | | | | | |
| 5 | 0.87 | | | | | | | | | | |
| 6 | | | | | | | | | | 1.41 | 0.48 |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | 0.70 | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | .55 | | 0.90 | | | | | | | | |
| 13 | | | | | | | | 1.7 | | 1.18 | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | 1.9 | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | .92 | | | | | | | | | |
| 20 | | | | | 1.42 | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | 1.75 | | | | | | 1.65 | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | 1.31 | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | 1.7 | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | 1.7 | | | | | | | | | |
| 31 | | | .69 | | | | | | | | |

*Daily discharge, in second-feet, of Reeve Davis flume near Happy Camp, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | 42 | | |
| 2 | | 34 | | | | | | | | | |
| 3 | | | | | | | | | 43 | | |
| 4 | | | | | | 43 | | | | | |
| 5 | 12.3 | | | | | | | | | | |
| 6 | | | | | | | | | | 28 | 4.1 |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | 8.5 | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | 5.5 | | 13.0 | | | | | | | | |
| 13 | | | | | | | | 38 | | 21 | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | 45 | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | 13.6 | | | | | | | | | |
| 20 | | | | | 29 | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | 40 | | | | | | 36 | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | 25 | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | 38 | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | 38 | | | | | | | | | |
| 31 | | | 8.3 | | | | | | | | |

NOTE.—Water reported turned out of flume Nov. 9, Dec. 31, 1912, and Jan. 10, 1913. Jan. 12 to Feb. 13, 1913, no water in flume owing to a break. Water turned in flume Feb. 14, but no reading was obtained, as observer was away. Observer reported that flume carried a full head of water practically all of April. Flume broke May 26 at 7 p. m.; repaired and water turned in June 3, 1913; after June 4 leakage was cut down to increase carrying capacity. Daily discharge determined from a well-defined rating curve.

40967°—WSP 361—16——30

## SALMON RIVER AT SOMESBAR, CAL.

LOCATION.—In the SE. ¼ sec. 2, T. 13 N., R. 6 E., below suspension footbridge, about 600 feet northeast of Somesbar post office, and about 1¾ miles above junction with Klamath River.

RECORDS AVAILABLE.—September 17, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections fastened to alder trees on right bank about 900 feet below bridge.

CHANNEL.—Bowlders and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curves fairly well defined for low and medium stages; results are fair. Estimates for high water are approximate.

*Discharge measurements of Salmon River at Somesbar, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 25 | Charles Leidl | 3.88 | 382 | Apr. 24 | Charles Leidl | 5.90 | 3,030 |
| 25 | Leidl and Hotelling | 3.90 | 376 | 25 | Leidl and Hotelling | 6.30 | 4,250 |
| Apr. 23 | Charles Leidl | 5.78 | 3,040 | June 25 | Carl Langford | 5.00 | 1,460 |
| 24 | Leidl and Hotelling | 5.95 | 3,080 | | | | |

*Daily gage height, in feet, of Salmon River at Somesbar, Cal., for the year ending Sept. 30, 1913.*

[W. H. Hotelling, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.67 | 3.91 | 4.5 | 5.7 | 5.3 | 4.8 | 6.0 | 5.9 | 6.6 | 4.9 | 4.1 | 3.65 |
| 2 | 3.66 | 3.90 | 4.5 | 5.5 | 5.3 | 4.9 | 6.0 | 5.6 | 6.8 | 4.8 | 4.1 | 3.62 |
| 3 | 3.65 | 3.40 | 4.45 | 5.3 | 5.2 | 4.9 | 5.7 | 5.5 | 7.0 | 5.0 | 4.0 | 3.61 |
| 4 | 3.64 | 3.40 | 4.45 | 5.2 | 5.3 | 4.9 | 5.8 | 5.6 | 6.7 | 5.0 | 4.0 | 4.0 |
| 5 | 3.62 | 4.2 | 4.4 | 5.1 | 5.4 | 4.9 | 6.0 | 5.95 | 6.4 | 4.9 | 4.0 | 3.95 |
| 6 | 3.61 | 9.0 | 4.4 | 5.1 | 5.4 | 5.0 | 5.9 | 6.4 | 5.9 | 4.85 | 4.0 | 3.80 |
| 7 | 3.61 | 6.5 | 4.4 | 5.05 | 5.4 | 5.1 | 5.8 | 6.9 | 5.9 | 4.8 | 3.98 | 3.80 |
| 8 | 3.61 | 5.45 | 4.35 | 5.05 | 5.4 | 5.3 | 5.85 | 6.6 | 5.7 | 4.8 | 3.98 | 3.75 |
| 9 | 3.61 | 6.8 | 4.2 | 5.0 | 5.4 | 5.4 | 5.9 | 6.6 | 5.7 | 4.7 | 3.95 | 3.70 |
| 10 | 3.61 | 6.0 | 4.25 | 4.9 | 5.4 | 5.6 | 6.0 | 6.6 | 5.6 | 4.5 | 3.80 | 3.67 |
| 11 | 3.61 | 5.45 | 4.2 | 4.9 | 5.4 | 5.5 | 6.1 | 6.6 | 5.65 | 4.4 | 3.79 | 3.60 |
| 12 | 3.61 | 5.95 | 4.35 | 5.0 | 5.4 | 5.45 | 6.1 | 6.4 | 5.6 | 4.4 | 3.79 | 3.60 |
| 13 | 3.61 | 5.5 | 4.4 | 5.3 | 5.45 | 5.35 | 6.2 | 6.1 | 5.5 | 4.4 | 3.78 | 3.60 |
| 14 | 3.59 | 6.6 | 4.9 | 5.4 | 5.5 | 5.2 | 6.2 | 5.9 | 5.4 | 4.4 | 3.78 | 3.60 |
| 15 | 3.57 | 5.55 | 6.0 | 5.55 | 5.5 | 5.1 | 5.9 | 5.9 | 5.1 | 4.35 | 3.79 | 3.60 |
| 16 | 3.57 | 5.1 | 6.0 | 5.65 | 5.55 | 5.1 | 5.8 | 6.2 | 5.05 | 4.2 | 3.77 | 3.60 |
| 17 | 3.57 | 6.0 | 6.2 | 5.6 | 5.7 | 5.0 | 5.7 | 6.3 | 5.05 | 4.0 | 3.77 | 3.60 |
| 18 | 3.57 | 5.6 | 5.9 | 6.2 | 5.65 | 5.1 | 5.7 | 6.4 | 5.0 | 4.0 | 3.77 | 3.60 |
| 19 | 3.60 | 5.1 | 5.7 | 6.4 | 5.6 | 5.2 | 5.65 | 6.5 | 5.1 | 4.2 | 3.75 | 3.60 |
| 20 | 3.60 | 4.95 | 5.6 | 6.0 | 5.5 | 5.15 | 5.7 | 6.5 | 5.3 | 4.2 | 3.75 | 3.60 |
| 21 | 3.59 | 4.95 | 5.4 | 5.5 | 5.4 | 5.05 | 5.7 | 6.4 | 5.0 | 4.2 | 3.71 | 3.61 |
| 22 | 3.61 | 4.9 | 5.2 | 5.35 | 5.3 | 5.0 | 5.9 | 6.8 | 5.0 | 4.4 | 3.70 | 3.60 |
| 23 | 3.63 | 4.75 | 5.0 | 5.2 | 5.3 | 5.0 | 5.9 | 7.0 | 4.8 | 4.55 | 3.70 | 3.60 |
| 24 | 3.90 | 4.9 | 4.95 | 5.0 | 5.0 | 5.0 | 5.95 | 7.2 | 4.9 | 4.6 | 3.69 | 3.60 |
| 25 | 3.88 | 4.8 | 4.95 | 4.9 | 4.9 | 4.9 | 6.3 | 7.1 | 4.9 | 4.5 | 3.69 | 3.60 |
| 26 | 4.0 | 4.75 | 4.9 | 5.0 | 4.9 | 4.8 | 6.7 | 7.1 | 4.9 | 4.4 | 3.68 | 3.59 |
| 27 | 3.90 | 4.75 | 4.9 | 5.0 | 4.9 | 4.8 | 6.5 | 7.0 | 5.0 | 4.0 | 3.66 | 3.60 |
| 28 | 3.90 | 4.7 | 4.9 | 5.0 | 4.8 | 5.0 | 6.1 | 6.7 | 5.0 | 4.2 | 3.65 | 3.60 |
| 29 | 4.0 | 4.6 | 4.9 | 5.1 | ..... | 5.45 | 5.9 | 6.5 | 5.0 | 4.1 | 3.72 | 3.60 |
| 30 | 4.0 | 4.5 | 6.2 | 5.1 | ..... | 5.8 | 5.9 | 6.5 | 5.0 | 4.15 | 3.68 | 3.60 |
| 31 | 3.98 | ..... | 5.7 | 5.1 | ..... | 6.1 | ..... | 6.5 | ..... | 4.15 | 3.65 | ..... |

*Daily discharge, in second-feet, of Salmon River, at Somesbar, Cal., for the years ending Sept. 30, 1911–13.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 17 | 204 | 22 | 180 | 27 | 218 |
| 18 | 192 | 23 | 180 | 28 | 204 |
| 19 | 192 | 24 | 180 | 29 | 204 |
| 20 | 180 | 25 | 180 | 30 | 204 |
| 21 | 180 | 26 | 192 | | |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 218 | 192 | 218 | 266 | 1,590 | 1,470 | 1,620 | 7,360 | 5,260 | 1,200 | 445 | 258 |
| 2 | 204 | 192 | 218 | 266 | 1,320 | 1,400 | 1,620 | 5,540 | 5,830 | 1,200 | 445 | 255 |
| 3 | 204 | 180 | 218 | 266 | 1,090 | 1,330 | 1,620 | 4,450 | 5,830 | 1,200 | 445 | 445 |
| 4 | 232 | 180 | 218 | 266 | 1,090 | 1,330 | 1,620 | 3,960 | 5,830 | 1,140 | 445 | 385 |
| 5 | 218 | 180 | 232 | 266 | 1,320 | 1,470 | 1,620 | 4,450 | 5,830 | 1,020 | 433 | 380 |
| 6 | 180 | 180 | 350 | 305 | 1,590 | 1,540 | 1,620 | 4,710 | 5,830 | 750 | 421 | 1,200 |
| 7 | 180 | 180 | 350 | 455 | 1,590 | 1,470 | 1,620 | 5,260 | 5,830 | 660 | 409 | 960 |
| 8 | 180 | 192 | 305 | 990 | 2,440 | 1,330 | 1,700 | 5,830 | 4,980 | 850 | 397 | 580 |
| 9 | 266 | 266 | 305 | 1,320 | 3,300 | 1,330 | 1,700 | 6,130 | 3,490 | 960 | 385 | 580 |
| 10 | 266 | 350 | 266 | 1,590 | 4,050 | 1,330 | 2,190 | 6,130 | 3,490 | 1,080 | 380 | 510 |
| 11 | 249 | 266 | 266 | 2,070 | 3,070 | 1,260 | 2,190 | 5,540 | 3,490 | 1,020 | 365 | 445 |
| 12 | 232 | 266 | 249 | 3,300 | 2,640 | 1,200 | 1,770 | 5,540 | 3,270 | 960 | 355 | 445 |
| 13 | 218 | 266 | 232 | 14,600 | 2,250 | 1,200 | 1,770 | 5,830 | 3,490 | 1,020 | 355 | 421 |
| 14 | 286 | 305 | 232 | 11,600 | 2,070 | 1,200 | 1,330 | 5,540 | 3,060 | 750 | 335 | 391 |
| 15 | 286 | 1,090 | 232 | 8,320 | 1,900 | 1,330 | 1,330 | 5,540 | 3,060 | 750 | 330 | 380 |
| 16 | 249 | 805 | 266 | 7,000 | 7,980 | 1,620 | 1,330 | 5,260 | 2,650 | 750 | 326 | 365 |
| 17 | 232 | 455 | 266 | 5,170 | 30,000 | 1,620 | 1,330 | 4,980 | 2,460 | 660 | 326 | 335 |
| 18 | 218 | 305 | 266 | 4,050 | 19,500 | 1,620 | 1,470 | 4,710 | 2,100 | 660 | 322 | 326 |
| 19 | 218 | 305 | 286 | 2,850 | 8,980 | 1,620 | 1,470 | 4,980 | 2,460 | 660 | 317 | 308 |
| 20 | 204 | 305 | 266 | 1,900 | 6,430 | 1,620 | 1,400 | 4,980 | 2,100 | 660 | 308 | 294 |
| 21 | 204 | 305 | 305 | 1,200 | 5,260 | 1,620 | 1,330 | 5,260 | 1,850 | 660 | 290 | 290 |
| 22 | 204 | 286 | 305 | 1,090 | 3,720 | 1,620 | 1,330 | 3,270 | 1,770 | 620 | 290 | 290 |
| 23 | 192 | 266 | 305 | 1,090 | 3,490 | 1,620 | 1,330 | 3,270 | 1,620 | 580 | 286 | 286 |
| 24 | 192 | 266 | 305 | 1,900 | 2,850 | 1,770 | 1,260 | 3,720 | 1,620 | 510 | 286 | 286 |
| 25 | 192 | 232 | 305 | 12,300 | 2,460 | 1,930 | 1,260 | 4,450 | 1,620 | 510 | 283 | 283 |
| 26 | 192 | 232 | 305 | 9,720 | 2,280 | 1,930 | 1,260 | 4,450 | 1,700 | 510 | 276 | 283 |
| 27 | 204 | 232 | 350 | 8,660 | 1,930 | 1,930 | 1,260 | 3,960 | 1,620 | 510 | 272 | 283 |
| 28 | 204 | 232 | 455 | 7,980 | 1,930 | 1,770 | 1,260 | 4,200 | 1,620 | 510 | 269 | 283 |
| 29 | 204 | 232 | 455 | 5,460 | 1,620 | 1,770 | 2,560 | 4,980 | 1,470 | 478 | 269 | 283 |
| 30 | 204 | 218 | 350 | 4,050 | ..... | 1,700 | 3,060 | 5,260 | 1,470 | 445 | 262 | 283 |
| 31 | 204 | ..... | 305 | 2,250 | ..... | 1,770 | ..... | 5,260 | ..... | 445 | 262 | ..... |
| 1912 13. | | | | | | | | | | | | |
| 1 | 280 | 391 | 850 | 2,650 | 1,930 | 1,200 | 3,270 | 3,060 | 4,710 | 1,330 | 510 | 272 |
| 2 | 276 | 385 | 850 | 2,280 | 1,930 | 1,330 | 3,270 | 2,460 | 5,260 | 1,200 | 510 | 262 |
| 3 | 272 | 200 | 800 | 1,930 | 1,770 | 1,330 | 2,650 | 2,280 | 5,830 | 1,470 | 445 | 258 |
| 4 | 269 | 200 | 800 | 1,770 | 1,930 | 1,330 | 2,850 | 2,460 | 4,980 | 1,470 | 445 | 445 |
| 5 | 262 | 580 | 750 | 1,620 | 2,100 | 1,330 | 3,270 | 3,160 | 4,200 | 1,330 | 445 | 415 |
| 6 | 258 | 12,500 | 750 | 1,620 | 2,100 | 1,470 | 3,060 | 4,200 | 3,060 | 1,260 | 445 | 335 |
| 7 | 258 | 4,450 | 750 | 1,540 | 2,100 | 1,620 | 2,850 | 5,540 | 3,060 | 1,200 | 433 | 335 |
| 8 | 258 | 2,190 | 705 | 1,540 | 2,100 | 1,930 | 2,960 | 4,710 | 2,650 | 1,200 | 433 | 312 |
| 9 | 258 | 5,260 | 580 | 1,470 | 2,100 | 2,100 | 3,060 | 4,710 | 2,650 | 1,080 | 415 | 290 |
| 10 | 258 | 3,270 | 620 | 1,330 | 2,100 | 2,460 | 3,270 | 4,710 | 2,460 | 850 | 335 | 280 |
| 11 | 258 | 2,190 | 580 | 1,330 | 2,100 | 2,280 | 3,490 | 4,710 | 2,560 | 750 | 330 | 255 |
| 12 | 258 | 3,160 | 705 | 1,470 | 2,100 | 2,190 | 3,490 | 4,200 | 2,460 | 750 | 330 | 255 |
| 13 | 258 | 2,280 | 750 | 1,930 | 2,190 | 2,020 | 3,720 | 3,490 | 2,280 | 750 | 326 | 255 |
| 14 | 252 | 4,710 | 1,330 | 2,100 | 2,280 | 1,770 | 3,720 | 3,060 | 2,100 | 750 | 326 | 255 |
| 15 | 246 | 2,370 | 3,270 | 2,370 | 2,280 | 1,620 | 3,060 | 3,060 | 1,620 | 705 | 330 | 255 |
| 16 | 246 | 1,620 | 3,270 | 2,560 | 2,370 | 1,620 | 2,850 | 3,720 | 1,540 | 580 | 322 | 255 |
| 17 | 246 | 3,270 | 3,720 | 2,460 | 2,650 | 1,470 | 2,650 | 3,960 | 1,540 | 445 | 322 | 255 |
| 18 | 246 | 2,460 | 3,060 | 3,720 | 2,560 | 1,620 | 2,650 | 4,200 | 1,470 | 445 | 322 | 255 |
| 19 | 255 | 1,620 | 2,650 | 4,200 | 2,460 | 1,770 | 2,560 | 4,450 | 1,620 | 580 | 312 | 255 |
| 20 | 255 | 1,400 | 2,460 | 3,270 | 2,280 | 1,700 | 2,650 | 4,450 | 1,930 | 580 | 312 | 255 |
| 21 | 252 | 1,400 | 2,100 | 2,280 | 2,100 | 1,540 | 2,650 | 4,200 | 1,470 | 580 | 294 | 258 |
| 22 | 258 | 1,330 | 1,770 | 2,020 | 1,930 | 1,470 | 3,060 | 5,260 | 1,470 | 750 | 290 | 255 |
| 23 | 266 | 1,140 | 1,470 | 1,770 | 1,930 | 1,470 | 3,060 | 5,830 | 1,200 | 905 | 290 | 255 |
| 24 | 385 | 1,330 | 1,400 | 1,470 | 1,470 | 1,470 | 3,160 | 6,430 | 1,330 | 960 | 286 | 255 |
| 25 | 375 | 1,200 | 1,400 | 1,330 | 1,330 | 1,330 | 3,960 | 6,130 | 1,330 | 850 | 286 | 255 |
| 26 | 445 | 1,140 | 1,330 | 1,470 | 1,330 | 1,200 | 4,980 | 6,130 | 1,330 | 750 | 283 | 252 |
| 27 | 385 | 1,140 | 1,330 | 1,470 | 1,330 | 1,200 | 4,450 | 5,830 | 1,470 | 445 | 276 | 255 |
| 28 | 385 | 1,080 | 1,330 | 1,470 | 1,200 | 1,470 | 3,490 | 4,980 | 1,470 | 580 | 372 | 255 |
| 29 | 445 | 960 | 1,330 | 1,620 | ..... | 2,190 | 3,060 | 4,450 | 1,470 | 510 | 299 | 255 |
| 30 | 445 | 850 | 3,720 | 1,620 | ..... | 2,850 | 3,060 | 4,450 | 1,470 | 545 | 283 | 255 |
| 31 | 433 | ..... | 2,650 | 1,620 | ..... | 3,490 | ..... | 4,450 | ..... | 545 | 272 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 17, 1911, to Feb. 17, 1912, poorly defined; Feb. 18, 1912, to Sept. 30, 1913, fairly well defined below 6,000 second-feet. Estimates for high water are based on extension of rating curves and are only approximate.

*Monthly discharge of Salmon River at Somesbar, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 17–20 | 218 | 180 | 192 | 5,330 | C. |
| 1911–12. | | | | | |
| October | 286 | 180 | 217 | 13,300 | C. |
| November | 1,090 | 180 | 299 | 17,800 | C. |
| December | 455 | 218 | 290 | 17,800 | C. |
| January | 14,600 | 266 | 3,950 | 243,000 | D. |
| February | 30,000 | 1,090 | 4,470 | 257,000 | D. |
| March | 1,930 | 1,200 | 1,540 | 94,700 | C. |
| April | 3,060 | 1,260 | 1,610 | 95,800 | C. |
| May | 7,360 | 3,270 | 4,990 | 307,000 | C. |
| June | 5,830 | 1,470 | 3,220 | 192,000 | C. |
| July | 1,200 | 445 | 765 | 47,000 | C. |
| August | 445 | 262 | 342 | 21,000 | C. |
| September | 1,200 | 255 | 404 | 24,000 | C. |
| The year | 30,000 | 180 | 1,830 | 1,330,000 | |
| 1912–13. | | | | | |
| October | 445 | 246 | 298 | 18,300 | C. |
| November | 12,500 | 200 | 2,200 | 131,000 | C. |
| December | 3,720 | 580 | 1,580 | 97,200 | C. |
| January | 4,200 | 1,330 | 1,980 | 122,000 | C. |
| February | 2,650 | 1,200 | 2,000 | 111,000 | C. |
| March | 3,490 | 1,200 | 1,740 | 107,000 | C. |
| April | 4,980 | 2,560 | 3,210 | 191,000 | B. |
| May | 6,430 | 2,280 | 4,350 | 267,000 | B. |
| June | 5,830 | 1,200 | 2,400 | 143,000 | B. |
| July | 1,470 | 445 | 843 | 51,800 | C. |
| August | 510 | 272 | 351 | 21,600 | C. |
| September | 445 | 252 | 277 | 16,500 | C. |
| The year | 12,500 | 200 | 1,760 | 1,280,000 | |

## TRINITY RIVER NEAR TRINITY CENTER, CAL.

LOCATION.—In the NE. ¼ sec. 16, T. 36 N., R 7 W., in Shasta National Forest, below highway bridge and 1½ miles southeast of Trinity Center. Coffee Creek enters 6 miles above, Hatchet Creek 1¾ miles above, East Fork three-fourths mile below, and Swift Creek 1¼ miles below station.

RECORDS AVAILABLE.—December 15, 1910, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to ash tree on right bank 650 feet below bridge.

CHANNEL.—Gravel; will shift during high water.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Water is diverted from North Fork of Swift Creek for placer mining at Trinity Center. This water enters Trinity River above the station.

ACCURACY.—Rating curve fairly well defined; results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Trinity River near Trinity Center, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 3 | G. H. Canfield | 3.70 | 540 | June 2 | G. H. Canfield | 5.43 | 2,230 |
| Mar. 28 | do | 3.85 | 642 | Sept. 24 | Lasley Lee | 2.64 | 99 |
| May 2 | do | 4.54 | 1,180 | | | | |

*Daily gage height, in feet, of Trinity River near Trinity Center, Cal., for the year ending Sept. 30, 1913.*

[R. W. Doney and M. Boswell, observers.]

| Day. | Oct. | Nov. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 4.65 | | 3.75 | | |
| 2 | 2.81 | | | | | 4.55 | 5.5 | | | |
| 3 | | 3.10 | 3.7 | | | | | | | |
| 4 | | | 3.7 | 3.9 | | | | | | |
| 5 | | | 3.7 | 3.9 | | 5.2 | 5.1 | | 2.98 | |
| 6 | 2.83 | | | | | | | | | |
| 7 | | 3.7 | 3.7 | 4.2 | | 5.8 | 4.8 | 3.5 | 2.95 | |
| 8 | | | 3.75 | | 4.6 | | | | | |
| 9 | | | 3.8 | | | 6.2 | | | | |
| 10 | | | | 4.6 | | | | | | |
| 11 | | | 3.95 | | | | | | 3.00 | |
| 12 | | | | | 5.2 | | | 3.40 | | |
| 13 | | | 4.1 | 4.35 | | | 4.3 | | | |
| 14 | | 4.65 | | 4.25 | | 5.25 | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | 4.05 | | 5.4 | | | | |
| 17 | | | | | | | | | | |
| 18 | | | 4.25 | 4.1 | | | | | | |
| 19 | | | 4.25 | | | | | | | |
| 20 | | | | 4.1 | | | | | | |
| 21 | | 3.6 | 4.05 | | 4.9 | 5.6 | | | | |
| 22 | | | 3.9 | | | | | 3.30 | | |
| 23 | 2.90 | | | 3.9 | | 6.0 | | | | |
| 24 | | | 3.8 | | 5.2 | 5.9 | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | 3.7 | | 6.2 | | | | |
| 27 | 2.96 | | 3.7 | 3.75 | | | | | | |
| 28 | | | | 3.85 | | | 3.95 | | | |
| 29 | | | | 4.05 | | | | 3.35 | | 2.70 |
| 30 | | 3.46 | | | | | | | 2.60 | |
| 31 | | | | 4.7 | | | | | | |

*Daily discharge, in second-feet, of Trinity River near Trinity Center, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 1,320 | | 575 | | |
| 2 | 128 | | | | | 1,220 | 2,320 | | | |
| 3 | | 218 | 542 | | | | | | | |
| 4 | | | 542 | 678 | | | | | | |
| 5 | | | 542 | 678 | | 1,940 | 1,820 | | 174 | |
| 6 | 133 | | | | | | | | | |
| 7 | | 542 | 542 | 905 | | 2,720 | 1,480 | 420 | 165 | |
| 8 | | | 575 | | 1,270 | | | | | |
| 9 | | | 608 | | | 3,290 | | | | |
| 10 | | | | 1,270 | | | | | | |
| 11 | | | 714 | | | | | | 180 | |
| 12 | | | | | 1,940 | | | 362 | | |
| 13 | | | 825 | 1,040 | | | 990 | | | |
| 14 | | 1,320 | | 948 | | 2,000 | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | 788 | | 2,190 | | | | |
| 17 | | | | | | | | | | |
| 18 | | | 948 | 825 | | | | | | |
| 19 | | | 948 | | | | | | | |
| 20 | | | 825 | | | | | | | |
| 21 | | 480 | 788 | | 1,590 | 2,450 | | | | |
| 22 | | | 678 | | | | | 308 | | |
| 23 | 150 | | | 678 | | 3,000 | | | | |
| 24 | | | 608 | | 1,940 | 2,860 | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | 542 | | 3,290 | | | | |
| 27 | 168 | | 542 | 575 | | | | | | |
| 28 | | | | 643 | | | 714 | | | |
| 29 | | | | 788 | | | | 335 | | 107 |
| 30 | | 397 | | | | | | | 93 | |
| 31 | | | | 1,370 | | | | | | |

NOTE.—Daily discharge determined from a fairly well defined rating curve.

## TRINITY RIVER AT LEWISTON, CAL.

LOCATION.—In the NE. ¼ sec. 19, T. 33 N., R. 8 W., at highway bridge at Lewiston, and about 9 miles below Stewarts Fork. Indian Creek enters 6 miles below the station.

RECORDS AVAILABLE.—August 28, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on left bank at bridge; lower section fastened to pile 10 feet above bridge; upper section fastened to downstream end of bridge abutment.

CHANNEL.—Small boulders and gravel; permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—Water is diverted above the station for irrigation, placer mining, and power development.

ACCURACY.—Rating curve well defined; results excellent.

*Discharge measurements of Trinity River at Lewiston, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Jan. 14 | G. H. Canfield | 3.53 | 713 | Ap. 27 | G. H. Canfield | 9.24 | 5,120 |
| Mar. 21 | do | 4.79 | 1,770 | May 27 | do | 7.70 | 5,840 |
| Apr. 26 | do | 7.15 | 4,900 | Sept. 21 | Lasley Lee | 2.29 | 150 |

*Daily gage height, in feet, of Trinity River at Lewiston, Cal., for the year ending Sept. 30, 1913.*

[W. W. Phillips, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 2.8 | 3.7 | 3.9 | 4.2 | 3.95 | 6.0 | 5.4 | 6.6 | 3.95 | 2.95 | 2.5 |
| 2 | 2.6 | 2.8 | 3.7 | 3.9 | 4.25 | 4.0 | 5.8 | 5.2 | 6.7 | 3.85 | 2.9 | 2.7 |
| 3 | 2.6 | 2.9 | 3.6 | 3.8 | 4.4 | 4.0 | 5.8 | 5.3 | 6.4 | 3.8 | 2.85 | 2.95 |
| 4 | 2.55 | 2.9 | 3.5 | 3.8 | 4.45 | 4.0 | 5.5 | 5.7 | 6.2 | 3.95 | 2.8 | 2.8 |
| 5 | 2.5 | 3.2 | 3.45 | 3.55 | 4.45 | 4.05 | 7.2 | 6.2 | 6.2 | 3.8 | 2.7 | 2.65 |
| 6 | 2.5 | 6.0 | 3.4 | 3.4 | 4.25 | 4.2 | 6.8 | 7.0 | 5.8 | 3.8 | 2.6 | 2.6 |
| 7 | 2.5 | 4.8 | 3.4 | 3.5 | 4.2 | 4.7 | 6.2 | 7.0 | 6.0 | 3.75 | 2.65 | 2.55 |
| 8 | 2.5 | 4.15 | 3.35 | 3.6 | 4.25 | 5.0 | 5.8 | 7.4 | 5.8 | 3.7 | 2.6 | 2.5 |
| 9 | 2.5 | 6.7 | 3.2 | 3.6 | 4.4 | 5.4 | 5.6 | 8.6 | 5.7 | 3.55 | 2.6 | 2.5 |
| 10 | 2.5 | 5.8 | 3.15 | 3.5 | 4.6 | 5.8 | 5.8 | 7.4 | 5.2 | 3.5 | 2.6 | 2.5 |
| 11 | 2.5 | 4.7 | 3.1 | 3.4 | 4.6 | 5.8 | 5.2 | 6.8 | 5.0 | 3.5 | 2.6 | 2.45 |
| 12 | 2.5 | 4.6 | 3.15 | 3.4 | 4.6 | 5.4 | 6.6 | 6.4 | 5.0 | 3.4 | 2.6 | 2.4 |
| 13 | 2.5 | 4.8 | 3.55 | 3.45 | 4.7 | 5.2 | 6.8 | 6.8 | 5.0 | 3.35 | 2.6 | 2.4 |
| 14 | 2.5 | 5.8 | 3.8 | 3.55 | 4.8 | 5.0 | 6.4 | 6.8 | 4.8 | 3.2 | 2.6 | 2.4 |
| 15 | 2.5 | 5.4 | 5.0 | 4.1 | 4.7 | 4.6 | 5.8 | 6.8 | 4.6 | 3.15 | 2.6 | 2.4 |
| 16 | 2.5 | 5.1 | 5.0 | 3.95 | 5.0 | 4.5 | 5.6 | 6.5 | 4.45 | 3.1 | 2.6 | 2.35 |
| 17 | 2.5 | 4.25 | 4.45 | 3.8 | 5.1 | 4.7 | 5.2 | 6.8 | 4.4 | 3.0 | 2.6 | 2.3 |
| 18 | 2.5 | 4.2 | 4.6 | 4.2 | 5.0 | 4.9 | 6.0 | 7.1 | 4.4 | 3.05 | 2.6 | 2.3 |
| 19 | 2.5 | 4.15 | 4.4 | 4.3 | 5.0 | 4.9 | 6.0 | 6.8 | 4.5 | 3.0 | 2.6 | 2.3 |
| 20 | 2.5 | 4.1 | 4.35 | 4.2 | 4.8 | 4.8 | 6.0 | 6.8 | 4.35 | 3.1 | 2.55 | 2.3 |
| 21 | 2.5 | 3.95 | 4.1 | 4.05 | 4.7 | 4.8 | 6.3 | 6.8 | 4.2 | 3.0 | 2.6 | 2.3 |
| 22 | 2.6 | 3.9 | 4.15 | 3.9 | 4.7 | 4.6 | 6.3 | 7.0 | 4.45 | 3.15 | 2.5 | 2.3 |
| 23 | 2.8 | 3.8 | 4.1 | 3.75 | 4.6 | 4.6 | 6.2 | 7.6 | 4.45 | 3.55 | 2.6 | 2.3 |
| 24 | 2.65 | 3.8 | 4.1 | 3.7 | 4.3 | 4.4 | 6.6 | 7.8 | 4.2 | 3.5 | 2.6 | 2.3 |
| 25 | 2.8 | 3.8 | 3.95 | 3.7 | 4.2 | 4.2 | 7.0 | 7.6 | 4.2 | 3.35 | 2.45 | 2.3 |
| 26 | 2.85 | 3.7 | 3.7 | 3.8 | 4.1 | 4.3 | 7.4 | 7.4 | 4.15 | 3.2 | 2.4 | 2.3 |
| 27 | 2.85 | 3.7 | 3.6 | 3.75 | 4.0 | 4.3 | 7.0 | 7.6 | 4.2 | 3.1 | 2.4 | 2.3 |
| 28 | 2.9 | 3.6 | 3.5 | 3.75 | 4.0 | 4.6 | 6.4 | 6.6 | 4.1 | 3.15 | 2.45 | 2.3 |
| 29 | 2.9 | 3.7 | 3.55 | 3.9 | ..... | 4.8 | 6.0 | 6.6 | 4.05 | 3.1 | 2.5 | 2.3 |
| 30 | 2.85 | 3.65 | 4.05 | 3.95 | ..... | 5.3 | 5.8 | 6.6 | 4.0 | 3.05 | 2.5 | 2.35 |
| 31 | 2.8 | ..... | 4.05 | 4.0 | ..... | 5.8 | ..... | 6.2 | ..... | 3.0 | 2.5 | ..... |

*Daily discharge, in second-feet, of Trinity River at Lewiston, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 240 | 315 | 835 | 980 | 1,220 | 1,020 | 3,250 | 2,470 | 4,090 | 1,020 | 385 | 205 |
| 2 | 240 | 315 | 835 | 980 | 1,260 | 1,060 | 2,990 | 2,230 | 4,240 | 942 | 360 | 275 |
| 3 | 240 | 360 | 765 | 905 | 1,390 | 1,060 | 2,990 | 2,350 | 3,800 | 905 | 338 | 385 |
| 4 | 222 | 360 | 700 | 905 | 1,440 | 1,060 | 2,600 | 2,860 | 3,520 | 1,020 | 315 | 315 |
| 5 | 205 | 515 | 668 | 732 | 1,440 | 1,100 | 5,000 | 3,520 | 3,520 | 905 | 275 | 258 |
| 6 | 205 | 3,250 | 635 | 635 | 1,260 | 1,220 | 4,390 | 4,690 | 2,990 | 905 | 240 | 240 |
| 7 | 205 | 1,780 | 635 | 700 | 1,220 | 1,680 | 3,520 | 4,690 | 3,250 | 870 | 258 | 222 |
| 8 | 205 | 1,180 | 605 | 765 | 1,260 | 2,000 | 2,990 | 5,320 | 2,990 | 835 | 240 | 205 |
| 9 | 205 | 4,240 | 515 | 765 | 1,390 | 2,470 | 2,730 | 7,450 | 2,860 | 732 | 240 | 205 |
| 10 | 205 | 2,990 | 488 | 700 | 1,580 | 2,990 | 2,990 | 5,320 | 2,230 | 700 | 240 | 205 |
| 11 | 205 | 1,680 | 460 | 635 | 1,580 | 2,990 | 2,230 | 4,390 | 2,000 | 700 | 240 | 190 |
| 12 | 205 | 1,580 | 488 | 635 | 1,580 | 2,470 | 4,090 | 3,800 | 2,000 | 635 | 240 | 175 |
| 13 | 205 | 1,780 | 732 | 668 | 1,680 | 2,230 | 4,390 | 4,390 | 2,000 | 605 | 240 | 175 |
| 14 | 205 | 2,990 | 905 | 732 | 1,780 | 2,000 | 3,800 | 4,390 | 1,780 | 515 | 240 | 175 |
| 15 | 205 | 2,470 | 2,000 | 1,140 | 1,680 | 1,580 | 2,990 | 4,390 | 1,580 | 488 | 240 | 175 |
| 16 | 205 | 2,110 | 2,000 | 1,020 | 2,000 | 1,480 | 2,730 | 3,940 | 1,440 | 460 | 240 | 162 |
| 17 | 205 | 1,260 | 1,440 | 905 | 2,110 | 1,680 | 2,230 | 4,390 | 1,390 | 410 | 240 | 150 |
| 18 | 205 | 1,220 | 1,580 | 1,220 | 2,000 | 1,890 | 3,250 | 4,840 | 1,390 | 435 | 240 | 150 |
| 19 | 205 | 1,180 | 1,390 | 1,300 | 2,000 | 1,890 | 3,250 | 4,390 | 1,480 | 410 | 240 | 150 |
| 20 | 205 | 1,140 | 1,340 | 1,220 | 1,780 | 1,780 | 3,250 | 4,390 | 1,340 | 460 | 222 | 150 |
| 21 | 205 | 1,020 | 1,140 | 1,100 | 1,680 | 1,780 | 3,660 | 4,390 | 1,220 | 410 | 240 | 150 |
| 22 | 240 | 980 | 1,180 | 980 | 1,680 | 1,580 | 3,660 | 4,690 | 1,440 | 488 | 205 | 150 |
| 23 | 315 | 905 | 1,140 | 870 | 1,580 | 1,580 | 3,520 | 5,640 | 1,440 | 732 | 240 | 150 |
| 24 | 258 | 905 | 1,140 | 835 | 1,300 | 1,390 | 4,090 | 5,980 | 1,220 | 700 | 240 | 150 |
| 25 | 315 | 905 | 1,020 | 835 | 1,220 | 1,220 | 4,690 | 5,640 | 1,220 | 605 | 190 | 150 |
| 26 | 338 | 835 | 835 | 905 | 1,140 | 1,300 | 5,320 | 5,320 | 1,180 | 515 | 175 | 150 |
| 27 | 338 | 835 | 675 | 870 | 1,060 | 1,300 | 4,690 | 5,640 | 1,220 | 460 | 175 | 150 |
| 28 | 360 | 765 | 700 | 870 | 1,060 | 1,580 | 3,800 | 4,090 | 1,140 | 488 | 190 | 150 |
| 29 | 360 | 835 | 732 | 980 | ..... | 1,780 | 3,250 | 4,090 | 1,100 | 460 | 205 | 150 |
| 30 | 338 | 800 | 1,100 | 1,020 | ..... | 2,350 | 2,990 | 4,090 | 1,060 | 435 | 205 | 162 |
| 31 | 315 | ..... | 1,100 | 1,060 | ..... | 2,990 | ..... | 3,520 | ..... | 410 | 205 | ..... |

NOTE.—Daily discharge determined from a well-defined rating curve.

*Monthly discharge of Trinity River at Lewiston, Cal., for the year ending Sept. 30, 1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| October | 360 | 205 | 245 | 15,100 | A. |
| November | 4,240 | 315 | 1,380 | 82,100 | A. |
| December | 2,000 | 460 | 963 | 59,200 | A. |
| January | 1,300 | 635 | 899 | 55,300 | A. |
| February | 2,110 | 1,060 | 1,510 | 83,900 | A. |
| March | 2,990 | 1,020 | 1,760 | 108,000 | A. |
| April | 5,320 | 2,230 | 3,510 | 209,000 | A. |
| May | 7,450 | 2,230 | 4,430 | 272,000 | A. |
| June | 4,240 | 1,060 | 2,070 | 123,000 | A. |
| July | 1,020 | 410 | 634 | 39,000 | A. |
| August | 385 | 175 | 243 | 14,900 | A. |
| September | 385 | 150 | 189 | 11,200 | A. |
| The year | 7,450 | 150 | 1,480 | 1,070,000 | |

## TRINITY RIVER NEAR CHINA FLAT, CAL.

LOCATION.—In sec. 14, T. 6 N., R. 5 E., at suspension foot bridge about 2 miles above junction with the South Fork and 8 miles above China Flat.

RECORDS AVAILABLE.—October 11, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in three sections bolted to rock ledge on left bank, 40 feet above bridge.

CHANNEL.—Bowlders and gravel partly covered with silt, the débris of placer mining; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge below gage or by wading.

DIVERSIONS.—Small quantity of water is diverted above station for irrigation, power development, and placer mining.

ACCURACY.—Rating curve fairly well defined for low and medium stages; results good.

*Discharge measurements of Trinity River near China Flat, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 29 | 5.30 | 805 | Oct. 20 | 10.39 | 6,230 | Sept. 13 | 4.38 | 384 |
| Jan. 23 | 7.95 | 3,370 | 29 | 10.78 | 6,610 | 13 | 4.38 | 388 |
| Mar. 24 | 7.64 | 3,050 | 30 | 10.18 | 5,640 | 13 | 4.38 | 380 |
| Apr. 19 | 10.58 | 6,650 | June 14 | 8.08 | 3,100 | | | |

*Daily gage height, in feet, of Trinity River near China Flat, Cal., for the year ending Sept. 30, 1913.*

[Nels Anderberg, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 5.2 | 6.4 | 8.8 | 9.2 | 7.6 | 10.0 | 9.7 | 11.2 | 7.0 | 5.5 |
| 2 | 4.65 | 5.25 | 6.4 | 8.3 | 9.7 | 7.5 | 10.8 | 9.4 | 11.2 | 6.8 | 5.45 |
| 3 | 4.65 | 5.35 | 6.3 | 8.0 | 9.6 | 7.4 | 10.4 | 9.2 | 11.0 | 6.9 | 5.4 |
| 4 | 4.6 | 5.35 | 6.3 | 7.8 | 9.3 | 7.6 | 10.4 | 9.5 | 10.7 | 6.9 | 5.4 |
| 5 | 4.6 | 5.8 | 6.2 | 7.5 | 9.0 | 7.8 | 12.6 | 10.5 | 10.4 | 6.8 | 5.3 |
| 6 | 4.55 | 14.4 | 6.1 | 7.2 | 8.9 | 8.2 | 11.8 | 11.7 | 10.2 | 6.8 | 5.2 |
| 7 | 4.5 | 11.1 | 6.0 | 7.1 | 9.0 | 8.8 | 11.1 | 12.5 | 10.0 | 6.7 | 5.1 |
| 8 | 4.5 | 8.3 | 6.0 | 7.5 | 9.4 | 9.8 | 10.7 | 12.4 | 9.5 | 6.7 | 5.0 |
| 9 | 4.5 | 8.3 | 5.9 | 7.1 | 9.6 | 9.9 | 10.5 | 13.2 | 9.6 | 6.6 | 4.95 |
| 10 | 4.5 | 11.6 | 5.9 | 7.0 | 9.8 | 10.3 | 10.6 | 12.3 | 8.8 | 6.5 | 4.9 |
| 11 | 4.5 | 9.2 | 6.0 | 6.8 | 9.9 | 10.4 | 11.2 | 11.5 | 8.4 | 6.3 | ..... |
| 12 | 4.5 | 9.3 | 6.0 | 6.9 | 9.8 | 10.0 | 12.1 | 10.7 | 8.2 | 6.2 | ..... |
| 13 | 4.5 | 8.7 | 6.3 | 8.0 | 9.8 | 9.6 | 12.2 | 10.5 | 8.6 | 6.2 | ..... |
| 14 | 4.5 | 11.5 | 7.6 | 7.8 | 9.8 | 9.0 | 11.2 | 10.4 | 8.2 | 6.1 | ..... |
| 15 | 4.5 | 10.8 | 10.2 | 8.6 | 9.8 | 8.8 | 10.6 | 10.4 | 7.7 | 6.0 | ..... |
| 16 | 4.5 | 9.6 | 10.5 | 8.7 | 10.2 | 8.4 | 10.4 | 11.0 | 7.5 | 6.0 | ..... |
| 17 | 4.5 | 8.6 | 10.4 | 8.2 | 10.8 | 8.6 | 10.0 | 11.4 | 7.4 | 5.8 | ..... |
| 18 | 4.5 | 8.2 | 10.4 | 9.8 | 10.8 | 9.2 | 10.6 | 11.8 | 7.5 | 5.7 | ..... |
| 19 | 4.5 | 8.0 | 10.0 | 10.0 | 10.1 | 9.1 | 10.7 | 11.5 | 7.6 | 5.7 | ..... |
| 20 | 4.5 | 7.9 | 9.4 | 9.4 | 9.8 | 8.8 | 10.6 | 11.2 | 7.5 | 5.8 | ..... |
| 21 | 4.5 | ..... | 8.7 | 8.6 | 9.4 | 8.6 | 10.8 | 11.3 | 7.2 | 6.4 | ..... |
| 22 | 4.55 | 7.6 | 8.3 | 8.3 | 9.0 | 8.6 | 11.2 | 12.0 | 7.3 | 6.6 | ..... |
| 23 | 5.0 | 7.0 | 7.9 | 8.0 | 8.8 | 8.4 | 10.9 | 12.5 | 7.9 | 6.5 | ..... |
| 24 | 5.2 | 6.8 | 7.7 | 7.6 | 8.4 | 8.2 | 11.2 | 12.7 | 7.5 | 6.4 | ..... |
| 25 | 5.15 | 6.7 | 7.4 | 7.5 | 8.2 | 8.0 | 12.0 | 12.6 | 7.2 | 6.4 | ..... |
| 26 | 5.25 | 6.6 | 7.2 | 7.6 | 8.0 | 7.8 | 13.2 | 12.1 | 7.0 | 6.2 | ..... |
| 27 | 5.3 | 6.6 | 7.1 | 7.8 | 8.0 | 7.7 | 12.5 | 12.8 | 7.2 | 5.9 | ..... |
| 28 | 5.2 | 6.6 | 7.0 | 8.0 | 7.6 | 8.2 | 11.3 | 11.2 | 7.4 | 5.8 | ..... |
| 29 | 5.4 | 6.5 | 7.0 | 8.1 | ..... | 9.2 | 10.8 | 10.6 | 7.0 | 5.8 | ..... |
| 30 | 5.35 | 6.4 | 9.0 | 8.4 | ..... | 10.0 | 10.1 | 10.4 | 6.9 | 5.7 | ..... |
| 31 | 5.35 | ..... | 9.0 | 8.6 | ..... | 10.5 | ..... | 10.8 | ..... | 5.6 | ..... |

*Daily discharge, in second-feet, of Trinity River near China Flat, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | ..... | 535 | 630 | 708 | 4,440 | 3,220 | 4,440 | 15,000 | 9,180 | 2,580 | 888 | 438 |
| 2 | ..... | 535 | 605 | 735 | 4,050 | 3,110 | 4,570 | 13,400 | 11,600 | 2,380 | 855 | 438 |
| 3 | ..... | 535 | 605 | 630 | 3,570 | 2,890 | 4,830 | 10,400 | 11,800 | 2,280 | 855 | 580 |
| 4 | ..... | 535 | 605 | 630 | 3,450 | 2,780 | 4,700 | 9,360 | 11,200 | 2,190 | 855 | 680 |
| 5 | ..... | 535 | 605 | 605 | 3,570 | 3,110 | 4,440 | 9,180 | 11,400 | 2,280 | 825 | 825 |
| 6 | ..... | 535 | 680 | 630 | 3,570 | 4,180 | 4,310 | 9,900 | 10,300 | 2,380 | 825 | 1,920 |
| 7 | ..... | 535 | 795 | 985 | 3,930 | 4,700 | 4,310 | 10,400 | 10,300 | 2,380 | 825 | 2,890 |
| 8 | ..... | 535 | 855 | 1,500 | 5,100 | 4,440 | 4,570 | 10,400 | 9,360 | 2,280 | 795 | 1,920 |
| 9 | ..... | 535 | 795 | 1,920 | 7,000 | 4,050 | 4,310 | 11,000 | 7,480 | 2,280 | 795 | 1,500 |
| 10 | ..... | 735 | 708 | 2,010 | 6,540 | 4,050 | 5,380 | 11,600 | 7,000 | 2,190 | 735 | 1,270 |
| 11 | ..... | 680 | 680 | 1,830 | 6,240 | 3,570 | 6,090 | 11,200 | 6,690 | 2,100 | 735 | 1,270 |
| 12 | 580 | 630 | 680 | 1,920 | 5,660 | 3,570 | 5,660 | 10,600 | 8,140 | 2,100 | 680 | 1,200 |
| 13 | 580 | 630 | 630 | 5,660 | 5,100 | 4,050 | 4,830 | 11,000 | 7,480 | 2,010 | 655 | 1,120 |
| 14 | 580 | 630 | 630 | 4,440 | 4,830 | 3,810 | 4,440 | 10,300 | 5,940 | 1,920 | 630 | 1,120 |
| 15 | 630 | 855 | 655 | 3,220 | 4,830 | 4,310 | 4,180 | 11,200 | 5,240 | 1,920 | 605 | 1,060 |
| 16 | 630 | 1,200 | 735 | 2,890 | 7,800 | 5,100 | 4,180 | 10,300 | 4,440 | 1,740 | 580 | 985 |
| 17 | 605 | 1,060 | 735 | 2,890 | 22,000 | 4,700 | 4,310 | 9,360 | 4,180 | 1,740 | 580 | 888 |
| 18 | 580 | 888 | 735 | 2,380 | 21,800 | 4,570 | 4,310 | 9,180 | 4,310 | 1,660 | 580 | 795 |
| 19 | 580 | 795 | 680 | 2,480 | 12,600 | 4,700 | 4,310 | 9,000 | 4,830 | 1,580 | 558 | 735 |
| 20 | 558 | 795 | 680 | 2,280 | 9,360 | 4,700 | 4,050 | 11,400 | 4,700 | 1,580 | 535 | 680 |
| 21 | 558 | 735 | 708 | 2,100 | 7,480 | 4,570 | 3,930 | 9,180 | 4,050 | 1,580 | 535 | 630 |
| 22 | 535 | 735 | 630 | 2,100 | 5,800 | 4,440 | 3,570 | 7,640 | 3,450 | 1,420 | 535 | 605 |
| 23 | 535 | 680 | 630 | 1,920 | 5,380 | 4,310 | 3,570 | 6,840 | 3,450 | 1,420 | 515 | 558 |
| 24 | 535 | 630 | 680 | 2,100 | 4,830 | 4,310 | 3,570 | 6,540 | 3,810 | 1,270 | 515 | 535 |
| 25 | 535 | 630 | 630 | 32,000 | 4,440 | 4,700 | 3,330 | 12,800 | 3,330 | 1,200 | 495 | 495 |
| 26 | 535 | 630 | 630 | 29,600 | 4,050 | 4,570 | 3,330 | 14,200 | 3,330 | 1,120 | 495 | 495 |
| 27 | 535 | 630 | 735 | 14,600 | 3,810 | 4,830 | 3,330 | 15,900 | 3,330 | 1,120 | 495 | 475 |
| 28 | 535 | 630 | 765 | 8,820 | 3,570 | 5,100 | 3,330 | 12,000 | 3,220 | 1,120 | 455 | 455 |
| 29 | 558 | 630 | 708 | 6,840 | 3,330 | 5,520 | 6,840 | 12,200 | 3,110 | 985 | 455 | 475 |
| 30 | 558 | 630 | 680 | 5,660 | ..... | 5,100 | 9,360 | 12,200 | 3,000 | 985 | 438 | 495 |
| 31 | 535 | ..... | 630 | 4,830 | ..... | 4,700 | ..... | 10,100 | ..... | 920 | 420 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 495 | 735 | 1,580 | 4,050 | 4,570 | 2,680 | 5,660 | 5,240 | 7,480 | 2,100 | 920 |
| 2 | 475 | 765 | 1,580 | 3,450 | 5,240 | 2,580 | 6,840 | 4,830 | 7,480 | 1,920 | 888 |
| 3 | 475 | 825 | 1,500 | 3,110 | 5,100 | 2,480 | 6,240 | 4,570 | 7,160 | 2,010 | 855 |
| 4 | 455 | 825 | 1,500 | 2,890 | 4,700 | 2,680 | 6,240 | 4,960 | 6,690 | 2,010 | 855 |
| 5 | 455 | 1,120 | 1,420 | 2,580 | 4,310 | 2,890 | 9,900 | 6,390 | 6,240 | 1,920 | 795 |
| 6 | 438 | 13,400 | 1,340 | 2,280 | 4,180 | 3,330 | 8,480 | 8,310 | 5,940 | 1,920 | 735 |
| 7 | 420 | 7,320 | 1,270 | 2,190 | 4,310 | 4,050 | 7,320 | 9,720 | 5,660 | 1,830 | 680 |
| 8 | 420 | 3,450 | 1,270 | 2,580 | 4,830 | 5,380 | 6,690 | 9,540 | 4,960 | 1,830 | 630 |
| 9 | 420 | 3,450 | 1,200 | 2,190 | 5,100 | 5,520 | 6,390 | 11,000 | 5,100 | 1,740 | 605 |
| 10 | 420 | 8,140 | 1,200 | 2,100 | 5,380 | 6,090 | 6,540 | 11,200 | 4,050 | 1,660 | 580 |
| 11 | 420 | 4,570 | 1,270 | 1,920 | 5,520 | 6,240 | 7,480 | 7,970 | 3,570 | 1,500 | ..... |
| 12 | 420 | 4,700 | 1,270 | 2,010 | 5,380 | 5,660 | 9,000 | 6,690 | 3,330 | 1,420 | ..... |
| 13 | 420 | 3,930 | 1,500 | 3,110 | 5,380 | 5,100 | 9,180 | 6,390 | 3,810 | 1,420 | ..... |
| 14 | 420 | 7,970 | 2,680 | 2,890 | 5,380 | 4,310 | 7,480 | 6,240 | 3,330 | 1,340 | ..... |
| 15 | 420 | 6,840 | 5,940 | 3,810 | 5,380 | 4,050 | 6,540 | 6,240 | 2,780 | 1,270 | ..... |
| 16 | 420 | 5,100 | 6,390 | 3,930 | 5,940 | 3,570 | 6,240 | 7,160 | 2,580 | 1,270 | ..... |
| 17 | 420 | 3,810 | 6,240 | 3,330 | 6,840 | 3,810 | 5,660 | 7,800 | 2,480 | 1,120 | ..... |
| 18 | 420 | 3,330 | 6,240 | 5,380 | 6,840 | 4,570 | 6,540 | 8,480 | 2,580 | 1,060 | ..... |
| 19 | 420 | 3,110 | 5,660 | 5,660 | 5,800 | 4,440 | 6,690 | 7,970 | 2,680 | 1,060 | ..... |
| 20 | 420 | 3,000 | 4,830 | 4,830 | 5,380 | 4,050 | 6,540 | 7,480 | 2,580 | 1,120 | ..... |
| 21 | 420 | 2,840 | 3,930 | 3,810 | 4,830 | 3,810 | 6,840 | 7,640 | 2,280 | 1,580 | ..... |
| 22 | 438 | 2,680 | 3,450 | 3,450 | 4,310 | 3,810 | 7,480 | 8,820 | 2,380 | 1,740 | ..... |
| 23 | 630 | 2,100 | 3,000 | 3,110 | 4,050 | 3,570 | 7,000 | 9,720 | 3,000 | 1,660 | ..... |
| 24 | 735 | 1,920 | 2,780 | 2,680 | 3,570 | 3,330 | 7,480 | 10,100 | 2,580 | 1,580 | ..... |
| 25 | 708 | 1,830 | 2,480 | 2,580 | 3,330 | 3,110 | 8,820 | 9,900 | 2,280 | 1,580 | ..... |
| 26 | 765 | 1,740 | 2,280 | 2,680 | 3,110 | 2,890 | 11,000 | 9,000 | 2,100 | 1,420 | ..... |
| 27 | 795 | 1,740 | 2,190 | 2,890 | 3,110 | 2,780 | 9,720 | 10,300 | 2,280 | 1,200 | ..... |
| 28 | 735 | 1,740 | 2,100 | 3,110 | 2,680 | 3,330 | 7,640 | 7,480 | 2,480 | 1,120 | ..... |
| 29 | 855 | 1,660 | 2,100 | 3,220 | ..... | 4,570 | 6,840 | 6,540 | 2,100 | 1,120 | ..... |
| 30 | 825 | 1,580 | 4,310 | 3,570 | ..... | 5,660 | 5,800 | 6,240 | 2,010 | 1,060 | ..... |
| 31 | 825 | ..... | 4,310 | 3,810 | ..... | 6,390 | ..... | 6,840 | ..... | 985 | ..... |

NOTE.—Daily discharge determined from a rating curve fairly well defined below 10,000 second-feet. The rating curve has been extended into high water by means of a study of area and velocity curves.

*Monthly discharge of Trinity River near China Flat, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911–12. | | | | | |
| October 12–31 | 630 | 535 | 564 | 22,400 | B. |
| November | 1,200 | 535 | 676 | 40,200 | B. |
| December | 855 | 605 | 682 | 41,900 | B. |
| January | 32,000 | 605 | 4,870 | 299,000 | C. |
| February | 22,000 | 3,330 | 6,490 | 373,000 | C. |
| March | 5,520 | 2,780 | 4,250 | 261,000 | B. |
| April | 9,360 | 3,330 | 4,550 | 271,000 | B. |
| May | 15,900 | 6,540 | 10,800 | 664,000 | C. |
| June | 11,800 | 3,000 | 6,320 | 376,000 | B. |
| July | 2,580 | 920 | 1,760 | 108,000 | B. |
| August | 888 | 420 | 637 | 39,200 | B. |
| September | 2,890 | 438 | 918 | 54,600 | B. |
| The period | | | | 2,550,000 | |
| 1912–13. | | | | | |
| October | 855 | 420 | 529 | 32,500 | B. |
| November | 13,400 | 735 | 3,540 | 211,000 | C. |
| December | 6,390 | 1,200 | 2,860 | 176,000 | B. |
| January | 5,660 | 1,920 | 3,200 | 197,000 | B. |
| February | 6,840 | 2,680 | 4,810 | 267,000 | B. |
| March | 6,390 | 2,480 | 4,090 | 251,000 | B. |
| April | 11,000 | 5,660 | 7,340 | 437,000 | B. |
| May | 11,200 | 4,570 | 7,770 | 478,000 | B. |
| June | 7,480 | 2,010 | 3,800 | 226,000 | B. |
| July | 2,100 | 985 | 1,500 | 92,200 | B. |
| August 1–10 | 920 | 580 | 754 | 15,000 | B. |
| The period | | | | 2,380,000 | |

## TRINITY RIVER AT HOOPA, CAL.

LOCATION.—In the NW. ¼ sec. 25, T. 8 N., R. 4 E., at Hoopa Indian Agency, about 1 mile above Hoopa Ferry and 11 miles above junction with Klamath River.

RECORDS AVAILABLE.—September 3, 1911, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Staff in three sections on left bank 800 feet above mouth of Supply Creek.

CHANNEL.—Sand and gravel; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from gaging car on ferry cable 1 mile below gage. As Supply Creek enters between gage and ferry, it is necessary to deduct discharge of the creek from measurements made at ferry to obtain flow at gage.

ACCURACY.—Rating curve fairly well defined at low and medium stages; results good.

*Discharge measurements of Trinity River at Hoopa, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 23 | Charles Leidl | 5.34 | 988 | Apr. 21 | Charles Leidl | 10.45 | 9,320 |
| 30 | do | 5.76 | 1,360 | 27 | do | 11.24 | 11,400 |
| Jan. 21 | do | 10.73 | 10,200 | May 1 | do | 9.53 | 6,720 |
| 24 | do | 9.39 | 6,660 | June 13 | H. D. McGlashan | 8.01 | 4,130 |
| Mar. 2 | do | 8.42 | 4,860 | 27 | Charles Leidl | 7.16 | 2,770 |
| 5 | do | 8.73 | 5,250 | Sept. 11 | do | 4.69 | 584 |
| Apr. 18 | do | 10.33 | 8,990 | 11 | do | 4.69 | 582 |

*Discharge measurements of Supply Creek at Hoopa, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Reference point to water surface. | Discharge. | Date. | Made by— | Reference point to water surface. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Oct. 23 | Charles Leidl | −9.60 | 14 | Apr. 21 | Charles Leidl | −9.10 | 62 |
| 30 | do | −9.60 | 22 | 27 | do | | 44 |
| Jan. 21 | do | −8.20 | 236 | May 1 | do | −9.20 | 39 |
| 24 | do | −8.66 | 123 | June 13 | H. D. McGlashan | −9.54 | 13 |
| Mar. 2 | do | −9.11 | 52 | 27 | Charles Leidl | −9.47 | 22 |
| 5 | do | −9.17 | 45 | Sept. 12 | do | −9.86 | 6.3 |
| Apr. 18 | do | −9.00 | 73 | | | | |

*Daily gage height, in feet, of Trinity River at Hoopa, Cal., for the year ending Sept. 30, 1913.*

[Julius Marshall, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.0 | 5.5 | 6.9 | 9.7 | 10.0 | 8.4 | 11.3 | 9.6 | 9.8 | 7.0 | 5.6 | 4.65 |
| 2 | 4.95 | 5.5 | 6.8 | 9.4 | 10.4 | 8.4 | 11.2 | 9.4 | 10.2 | 7.0 | 5.55 | 4.6 |
| 3 | 4.95 | 5.5 | 6.8 | 9.2 | 10.4 | 8.5 | 10.8 | 9.2 | 10.0 | 7.0 | 5.55 | 4.65 |
| 4 | 4.95 | 5.7 | 6.8 | 9.0 | 10.2 | 8.5 | 11.2 | 9.7 | 9.9 | 7.1 | 5.5 | 4.9 |
| 5 | 4.95 | 7.8 | 6.6 | 8.7 | 10.0 | 8.7 | 12.0 | 10.2 | 9.6 | 7.0 | 5.45 | 4.8 |
| 6 | 4.9 | 13.1 | 6.6 | 8.5 | 9.8 | 9.0 | 12.2 | 10.5 | 9.4 | 6.8 | 5.45 | 4.8 |
| 7 | 4.9 | 12.6 | 6.5 | 8.4 | 9.9 | 9.3 | 11.4 | 11.0 | 9.2 | 6.7 | 5.4 | 4.75 |
| 8 | 4.9 | 9.1 | 6.4 | 8.4 | 10.0 | 9.8 | 11.1 | 10.9 | 8.9 | 6.6 | 5.3 | 4.75 |
| 9 | 4.9 | 8.7 | 6.4 | 8.3 | 10.3 | 10.1 | 10.9 | 11.4 | 8.9 | 6.5 | 5.25 | 4.7 |
| 10 | 4.9 | 10.7 | 6.3 | 8.1 | 10.5 | 10.4 | 10.9 | 11.4 | 8.6 | 6.4 | 5.25 | 4.7 |
| 11 | 4.9 | 10.8 | 6.4 | 8.0 | 10.6 | 10.6 | 11.2 | 10.8 | 8.2 | 6.4 | 5.2 | 4.7 |
| 12 | 4.9 | 10.4 | 6.6 | 8.2 | 10.5 | 10.3 | 11.4 | 10.4 | 8.1 | 6.3 | 5.15 | 4.65 |
| 13 | 4.9 | 9.1 | 6.7 | 9.0 | 10.5 | 10.0 | 11.1 | 10.0 | 8.0 | 6.2 | 5.1 | 4.6 |
| 14 | 4.9 | 10.0 | 7.4 | 11.1 | 10.4 | 9.5 | 10.8 | 9.9 | 7.9 | 6.1 | 5.05 | 4.6 |
| 15 | 4.8 | 10.7 | 10.6 | 11.1 | 10.4 | 9.2 | 10.7 | 9.9 | 7.8 | 5.95 | 5.05 | 4.55 |
| 16 | 4.8 | 9.8 | 12.0 | 11.1 | 10.8 | 9.0 | 10.5 | 10.1 | 7.6 | 5.9 | 5.05 | 4.55 |
| 17 | 4.8 | 9.4 | 12.8 | 11.1 | 11.0 | 9.0 | 10.2 | 10.3 | 7.5 | 5.85 | 5.05 | 4.5 |
| 18 | 4.8 | 8.5 | 12.0 | 12.0 | 11.0 | 9.6 | 10.4 | 10.4 | 7.5 | 5.8 | 5.05 | 4.5 |
| 19 | 4.85 | 8.5 | 11.3 | 12.0 | 10.9 | 9.6 | 10.5 | 10.5 | 7.6 | 5.8 | 4.95 | 4.5 |
| 20 | 4.85 | 8.5 | 10.5 | 11.6 | 10.3 | 9.4 | 10.6 | 10.3 | 7.6 | 5.8 | 4.95 | 4.5 |
| 21 | 4.85 | 8.1 | 9.9 | 10.7 | 10.0 | 9.3 | 10.5 | 10.2 | 7.7 | 5.8 | 4.95 | 4.45 |
| 22 | 4.9 | 8.0 | 9.4 | 10.2 | 9.8 | 9.4 | 10.6 | 10.6 | 7.8 | 5.95 | 4.9 | 4.45 |
| 23 | 5.25 | 7.8 | 9.0 | 9.8 | 9.4 | 9.1 | 10.5 | 10.6 | 7.7 | 6.3 | 4.8 | 4.45 |
| 24 | 5.4 | 7.6 | 8.8 | 9.4 | 9.2 | 9.0 | 10.5 | 10.9 | 7.6 | 6.3 | 4.8 | 4.45 |
| 25 | 5.6 | 7.4 | 8.6 | 9.3 | 9.1 | 8.8 | 10.9 | 11.2 | 7.4 | 6.3 | 4.75 | 4.45 |
| 26 | 5.5 | 7.3 | 8.4 | 9.2 | 8.8 | 8.6 | 11.5 | 11.0 | 7.2 | 5.95 | 4.7 | 4.45 |
| 27 | 5.65 | 7.3 | 8.2 | 9.3 | 8.6 | 8.6 | 11.4 | 11.1 | 7.2 | 6.0 | 4.75 | 4.45 |
| 28 | 5.8 | 7.2 | 8.1 | 9.4 | 8.5 | 9.0 | 10.8 | 10.7 | 7.3 | 6.1 | 4.7 | 4.45 |
| 29 | 6.7 | 7.1 | 8.2 | 9.5 | ..... | 10.0 | 10.6 | 10.0 | 7.3 | 6.1 | 4.7 | 4.45 |
| 30 | 6.7 | 7.0 | 10.1 | 9.6 | ..... | 10.7 | 9.8 | 9.8 | 7.1 | 5.9 | 4.7 | 4.5 |
| 31 | 6.6 | ..... | 9.9 | 9.7 | ..... | 11.0 | ..... | 9.9 | ..... | 5.75 | 4.65 | ..... |

*Daily discharge, in second-feet, of Trinity River at Hoopa, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 410 | 21 | 410 |
| 2 | ..... | 12 | 430 | 22 | 392 |
| 3 | 375 | 13 | 450 | 23 | 392 |
| 4 | 392 | 14 | 450 | 24 | 375 |
| 5 | 410 | 15 | 450 | 25 | 410 |
| 6 | 410 | 16 | 450 | 26 | 450 |
| 7 | 410 | 17 | 430 | 27 | 470 |
| 8 | 430 | 18 | 410 | 28 | 490 |
| 9 | 410 | 19 | 410 | 29 | 490 |
| 10 | 410 | 20 | 410 | 30 | 470 |

*Daily discharge, in second-feet, of Trinity River at Hoopa, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911-12. | | | | | | | | | | | | |
| 1 | 470 | 490 | 585 | 810 | 5,670 | 4,390 | 8,080 | 27,700 | 12,300 | 3,040 | 1,080 | 668 |
| 2 | 450 | 490 | 585 | 810 | 5,090 | 4,390 | 5,670 | 23,300 | 12,000 | 2,780 | 1,040 | 668 |
| 3 | 490 | 490 | 585 | 810 | 4,730 | 4,070 | 6,290 | 20,100 | 11,400 | 2,780 | 1,040 | 695 |
| 4 | 490 | 490 | 585 | 635 | 4,560 | 3,760 | 6,290 | 15,400 | 11,400 | 2,780 | 1,040 | 965 |
| 5 | 512 | 490 | 690 | 635 | 4,390 | 4,230 | 5,870 | 14,100 | 11,100 | 2,650 | 1,000 | 1,340 |
| 6 | 490 | 490 | 810 | 720 | 4,390 | 6,290 | 5,470 | 13,800 | 10,600 | 2,650 | 965 | 2,650 |
| 7 | 490 | 490 | 875 | 1,590 | 4,390 | 7,190 | 5,470 | 13,800 | 10,300 | 2,650 | 965 | 3,760 |
| 8 | 490 | 490 | 810 | 2,140 | 6,730 | 6,730 | 5,870 | 13,800 | 9,200 | 2,650 | 965 | 2,530 |
| 9 | 512 | 535 | 750 | 3,640 | 7,670 | 6,080 | 5,470 | 14,400 | 7,670 | 2,530 | 965 | 1,960 |
| 10 | 560 | 810 | 720 | 3,640 | 7,670 | 5,870 | 6,290 | 13,800 | 7,190 | 2,410 | 928 | 1,760 |
| 11 | 585 | 810 | 662 | 3,050 | 7,430 | 5,470 | 7,190 | 13,200 | 7,430 | 2,290 | 890 | 1,570 |
| 12 | 585 | 690 | 635 | 3,190 | 6,510 | 5,470 | 6,730 | 13,200 | 7,190 | 2,290 | 890 | 1,480 |
| 13 | 560 | 750 | 635 | 9,200 | 5,870 | 6,290 | 6,080 | 12,600 | 7,920 | 2,180 | 855 | 1,380 |
| 14 | 585 | 720 | 635 | 7,160 | 5,870 | 5,670 | 5,470 | 12,900 | 6,080 | 2,070 | 855 | 1,380 |
| 15 | 635 | 1,300 | 635 | 4,290 | 5,670 | 6,290 | 5,280 | 12,600 | 5,670 | 1,960 | 855 | 1,520 |
| 16 | 635 | 1,590 | 690 | 4,640 | 10,000 | 8,170 | 5,280 | 12,300 | 5,090 | 1,860 | 820 | 1,210 |
| 17 | 585 | 1,300 | 875 | 4,290 | 29,000 | 7,920 | 5,280 | 10,800 | 4,560 | 1,860 | 820 | 1,040 |
| 18 | 535 | 1,110 | 780 | 3,800 | 29,400 | 7,430 | 5,280 | 10,300 | 4,730 | 1,760 | 820 | 1,040 |
| 19 | 535 | 1,020 | 750 | 3,800 | 19,700 | 7,430 | 5,090 | 10,300 | 5,090 | 1,760 | 788 | 965 |
| 20 | 512 | 842 | 750 | 3,640 | 14,100 | 7,190 | 4,730 | 16,100 | 4,910 | 1,760 | 755 | 890 |
| 21 | 490 | 750 | 690 | 3,190 | 11,400 | 6,960 | 4,560 | 11,400 | 4,390 | 1,660 | 755 | 890 |
| 22 | 490 | 750 | 635 | 2,910 | 9,200 | 6,510 | 4,390 | 9,200 | 4,070 | 1,660 | 725 | 855 |
| 23 | 490 | 690 | 690 | 3,340 | 7,920 | 6,290 | 4,230 | 8,170 | 4,230 | 1,520 | 725 | 820 |
| 24 | 490 | 662 | 750 | 45,900 | 8,170 | 6,510 | 4,560 | 8,170 | 4,390 | 1,380 | 725 | 788 |
| 25 | 490 | 635 | 662 | 55,600 | 6,290 | 6,730 | 4,390 | 11,400 | 4,070 | 1,380 | 695 | 788 |
| 26 | 490 | 635 | 662 | 24,200 | 5,870 | 6,510 | 4,230 | 15,400 | 3,760 | 1,380 | 695 | 755 |
| 27 | 490 | 635 | 875 | 12,600 | 5,670 | 6,730 | 4,230 | 13,800 | 3,760 | 1,380 | 668 | 755 |
| 28 | 490 | 635 | 910 | 9,200 | 4,910 | 7,190 | 4,390 | 15,700 | 3,610 | 1,300 | 640 | 788 |
| 29 | 535 | 610 | 842 | 8,170 | 4,560 | 7,430 | 11,400 | 13,800 | 3,460 | 1,210 | 640 | 788 |
| 30 | 512 | 610 | 810 | 6,510 | ..... | 7,190 | 17,800 | 15,700 | 3,180 | 1,120 | 640 | 755 |
| 31 | 490 | ..... | 780 | 6,290 | ..... | 6,730 | ..... | 10,800 | ..... | 1,080 | 640 | ..... |
| 1912-13. | | | | | | | | | | | | |
| 1 | 755 | 1,120 | 2,530 | 7,430 | 8,170 | 4,730 | 11,700 | 7,190 | 7,670 | 2,650 | 1,210 | 568 |
| 2 | 725 | 1,120 | 2,410 | 6,730 | 9,200 | 4,730 | 11,400 | 6,730 | 8,680 | 2,650 | 1,170 | 545 |
| 3 | 725 | 1,120 | 2,410 | 6,290 | 9,200 | 4,910 | 10,300 | 6,290 | 8,170 | 2,650 | 1,170 | 568 |
| 4 | 725 | 1,300 | 2,410 | 5,870 | 8,680 | 4,910 | 11,400 | 7,430 | 7,920 | 2,780 | 1,120 | 695 |
| 5 | 725 | 3,760 | 2,180 | 5,280 | 8,170 | 5,280 | 13,800 | 8,680 | 7,190 | 2,650 | 1,080 | 640 |
| 6 | 695 | 17,500 | 2,180 | 4,910 | 7,670 | 5,870 | 14,400 | 9,470 | 6,730 | 2,410 | 1,080 | 640 |
| 7 | 695 | 15,700 | 2,070 | 4,730 | 7,920 | 6,510 | 12,000 | 10,800 | 6,290 | 2,290 | 1,040 | 615 |
| 8 | 695 | 6,080 | 1,960 | 4,730 | 8,170 | 7,670 | 11,100 | 10,600 | 5,670 | 2,180 | 965 | 615 |
| 9 | 695 | 5,280 | 1,960 | 4,560 | 8,940 | 8,420 | 10,600 | 12,000 | 5,670 | 2,070 | 928 | 590 |
| 10 | 695 | 10,000 | 1,860 | 4,230 | 9,470 | 9,200 | 10,600 | 12,000 | 5,090 | 1,960 | 928 | 590 |
| 11 | 695 | 10,300 | 1,960 | 4,070 | 9,740 | 9,740 | 11,400 | 10,300 | 4,390 | 1,960 | 890 | 590 |
| 12 | 695 | 9,200 | 2,180 | 4,390 | 9,470 | 8,940 | 12,000 | 9,200 | 4,230 | 1,860 | 855 | 568 |
| 13 | 695 | 6,080 | 2,290 | 5,870 | 9,470 | 8,170 | 11,100 | 8,170 | 4,070 | 1,760 | 820 | 545 |
| 14 | 695 | 8,170 | 3,180 | 11,100 | 9,200 | 6,960 | 10,300 | 7,920 | 3,910 | 1,660 | 788 | 545 |
| 15 | 640 | 10,000 | 9,740 | 11,100 | 9,200 | 6,290 | 10,000 | 7,920 | 3,760 | 1,520 | 788 | 525 |
| 16 | 640 | 7,670 | 13,800 | 11,100 | 10,300 | 5,870 | 9,470 | 8,420 | 3,460 | 1,480 | 788 | 525 |
| 17 | 640 | 6,730 | 16,400 | 11,100 | 10,800 | 5,870 | 8,680 | 8,940 | 3,320 | 1,430 | 788 | 505 |
| 18 | 640 | 4,910 | 13,800 | 13,800 | 10,800 | 7,190 | 9,200 | 9,200 | 3,320 | 1,380 | 788 | 505 |
| 19 | 668 | 4,910 | 11,700 | 13,800 | 10,600 | 7,190 | 9,470 | 9,470 | 3,460 | 1,380 | 725 | 505 |
| 20 | 668 | 4,910 | 9,470 | 12,600 | 8,940 | 6,730 | 9,740 | 8,940 | 3,460 | 1,380 | 725 | 505 |
| 21 | 668 | 4,230 | 7,920 | 10,000 | 8,150 | 6,510 | 9,470 | 8,680 | 3,610 | 1,380 | 725 | 488 |
| 22 | 695 | 4,070 | 6,730 | 8,680 | 7,670 | 6,730 | 9,740 | 9,740 | 3,760 | 1,520 | 695 | 488 |
| 23 | 928 | 3,760 | 5,870 | 7,670 | 6,730 | 6,080 | 9,470 | 9,740 | 3,610 | 1,860 | 640 | 488 |
| 24 | 1,040 | 3,460 | 5,470 | 6,730 | 6,290 | 5,870 | 9,470 | 10,600 | 3,460 | 1,860 | 640 | 488 |
| 25 | 1,210 | 3,180 | 5,090 | 6,510 | 6,080 | 5,470 | 10,600 | 11,400 | 3,180 | 1,860 | 615 | 488 |
| 26 | 1,120 | 3,040 | 4,730 | 6,290 | 5,470 | 5,090 | 12,300 | 10,800 | 2,910 | 1,520 | 590 | 488 |
| 27 | 1,250 | 3,040 | 4,390 | 6,510 | 5,090 | 5,090 | 12,000 | 11,100 | 2,910 | 1,560 | 615 | 488 |
| 28 | 1,380 | 2,910 | 4,230 | 6,730 | 4,910 | 5,870 | 10,300 | 10,000 | 3,040 | 1,660 | 590 | 488 |
| 29 | 2,290 | 2,780 | 4,390 | 6,960 | ..... | 8,170 | 9,740 | 8,170 | 3,040 | 1,660 | 590 | 488 |
| 30 | 2,290 | 2,650 | 8,420 | 7,190 | ..... | 10,000 | 7,670 | 7,670 | 2,780 | 1,480 | 590 | 505 |
| 31 | 2,180 | ..... | 7,920 | 7,430 | ..... | 10,800 | ..... | 7,920 | ..... | 1,340 | 568 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 3, 1911, to Jan. 25, 1912, fairly well defined below 1,500 second-feet; Jan. 26, 1912, to Sept. 30, 1913, well defined below 16,000 second-feet.

*Monthly discharge of Trinity River at Hoopa, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| Sept. 3–30 | 490 | 375 | 425 | 23,600 | B. |
| 1911–12. | | | | | |
| October | 635 | 450 | 521 | 32,000 | B. |
| November | 1,590 | 490 | 734 | 43,700 | B. |
| December | 910 | 585 | 721 | 44,300 | B. |
| January | 55,600 | 635 | 7,750 | 477,000 | C. |
| February | 29,400 | 4,390 | 8,720 | 502,000 | C. |
| March | 8,170 | 3,760 | 6,290 | 387,000 | B. |
| April | 17,800 | 4,230 | 5,980 | 356,000 | B. |
| May | 27,700 | 8,170 | 13,800 | 848,000 | B. |
| June | 12,300 | 3,180 | 6,690 | 398,000 | B. |
| July | 3,040 | 1,080 | 1,990 | 122,000 | B. |
| August | 1,080 | 640 | 835 | 51,300 | B. |
| September | 3,760 | 668 | 1,250 | 74,400 | A. |
| The year | 55,600 | 450 | 4,600 | 3,340,000 | |
| 1912–13. | | | | | |
| October | 2,290 | 640 | 931 | 57,200 | A. |
| November | 17,500 | 1,120 | 5,630 | 335,000 | A. |
| December | 16,400 | 1,860 | 5,540 | 341,000 | B. |
| January | 13,800 | 4,070 | 7,560 | 465,000 | B. |
| February | 10,800 | 4,910 | 8,380 | 465,000 | B. |
| March | 10,800 | 4,730 | 6,800 | 418,000 | A. |
| April | 14,400 | 7,670 | 10,600 | 631,000 | A. |
| May | 12,000 | 6,290 | 9,210 | 566,000 | A. |
| June | 8,680 | 2,780 | 4,630 | 276,000 | A. |
| July | 2,780 | 1,340 | 1,860 | 114,000 | A. |
| August | 1,210 | 568 | 823 | 50,600 | A. |
| September | 695 | 488 | 543 | 32,300 | A. |
| The year | 17,500 | 488 | 5,180 | 3,750,000 | |

## COFFEE CREEK AT COFFEE, CAL.

LOCATION.—In the NW. ¼ sec. 4, T. 37 N., R. 8 W., in Shasta National Forest at private highway bridge at Coffee, and about 5 miles above junction with Trinity River. Boulder Creek enters 400 feet above and Little Boulder Creek 1¼ miles below station.

RECORD AVAILABLE.—December 16, 1910, to September 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to upstream end of bridge pier near right bank.

CHANNEL.—Gravel and bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

WINTER FLOW.—Discharge relation sometimes slightly affected by ice during December and January.

REGULATION.—From April to July, inclusive, and occasionally throughout rest of year, two dams with automatic or "self-shooting" gates are operated about 10 miles above station. The Nash mine operates a dam having a working capacity of about 125 acre-feet; the Holland mine, on the East Fork, a dam having a working capacity of about 40 acre-feet. At the beginning of the season, in April, these dams fill and "shoot" about once an hour; at the end of the season, in July, once in 20 or 24 hours. During high water these "floods" are hardly perceptible, but late in the season their effect is pronounced. An effort is made to secure gage readings when the flow is normal.

ACCURACY.—The gage-height record, on account of the operation of these dams, is subject to some error; otherwise results good.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of Coffee Creek at Coffee, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 2 | G. H. Canfield | 4.11 | 118 | June 1 | G. H. Canfield | 5.97 | 1,110 |
| Mar. 27 | do | 4.21 | 117 | 4 | do | 6.00 | 1,120 |
| May 3 | do | 5.11 | 462 | Sept. 23 | Lasley Lee | 3.58 | 46 |
| 3 | do | 5.06 | 453 | | | | |

*Daily gage height, in feet, of Coffee Creek at Coffee, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.65 | ..... | 3.97 | ..... | 3.95 | 4.10 | 4.55 | 5.2 | 6.3 | 4.62 | 4.10 | 3.95 |
| 2 | 3.63 | ..... | 3.95 | 3.90 | 4.00 | 4.05 | 4.57 | 5.2 | 6.2 | 4.70 | 4.10 | 3.97 |
| 3 | ..... | 3.75 | ..... | ..... | 4.10 | 4.10 | 4.60 | 5.2 | 6.05 | 4.72 | 4.10 | 4.00 |
| 4 | 3.60 | 3.80 | 3.92 | 3.87 | 4.10 | 4.10 | 4.65 | 5.3 | 5.8 | 4.70 | 4.10 | 3.95 |
| 5 | 3.58 | 3.85 | 3.85 | 3.87 | 4.10 | 4.15 | 4.67 | 5.6 | 5.75 | 4.62 | 4.05 | 3.75 |
| 6 | ..... | ..... | ..... | ..... | 4.00 | 4.18 | 4.70 | 6.1 | 5.7 | 4.50 | 4.03 | 3.73 |
| 7 | ..... | ..... | ..... | 3.83 | 4.05 | 4.30 | 4.70 | 6.3 | 5.55 | 4.55 | 4.00 | 3.71 |
| 8 | ..... | 4.15 | 3.90 | 3.80 | 4.10 | 4.45 | 4.80 | 6.1 | 5.65 | 4.45 | 3.88 | 3.71 |
| 9 | ..... | 5.45 | ..... | ..... | 4.15 | 4.63 | 4.80 | 6.1 | 5.45 | 4.48 | 3.88 | 3.70 |
| 10 | ..... | ..... | ..... | 3.80 | 4.15 | 4.63 | 4.90 | 5.7 | 5.4 | 4.42 | 3.85 | 3.70 |
| 11 | ..... | ..... | 3.87 | 3.78 | 4.20 | 4.60 | 5.0 | 5.65 | 5.45 | 4.42 | 3.83 | 3.67 |
| 12 | ..... | ..... | 3.88 | 3.78 | 4.20 | 4.58 | 5.05 | 5.45 | 5.35 | 4.38 | 3.92 | 3.67 |
| 13 | 3.52 | 4.60 | ..... | 3.80 | 4.25 | 4.55 | 5.0 | 5.45 | 5.25 | 4.40 | ..... | 3.67 |
| 14 | 3.52 | 4.55 | ..... | 3.80 | 4.30 | 4.52 | 5.1 | 5.45 | 5.25 | 4.35 | ..... | 3.65 |
| 15 | ..... | 4.42 | ..... | 3.85 | 4.30 | 4.50 | 5.1 | 5.6 | 5.15 | 4.25 | ..... | 3.65 |
| 16 | ..... | ..... | ..... | 3.85 | 4.40 | 4.45 | 5.05 | 6.15 | 5.05 | 4.25 | ..... | 3.63 |
| 17 | ..... | 4.25 | ..... | 3.85 | 4.45 | 4.47 | 5.1 | 5.9 | 5.0 | 4.22 | ..... | 3.63 |
| 18 | ..... | ..... | ..... | 3.85 | 4.50 | 4.45 | 5.15 | 6.1 | 5.0 | 4.22 | ..... | 3.60 |
| 19 | 3.52 | 4.28 | ..... | 3.80 | 4.45 | 4.45 | 5.1 | 5.95 | 5.15 | 4.20 | ..... | 3.60 |
| 20 | 3.52 | ..... | ..... | 3.80 | 4.40 | 4.43 | 5.1 | 6.0 | 4.95 | 4.20 | ..... | 3.60 |
| 21 | ..... | ..... | ..... | 3.80 | 4.35 | 4.45 | 5.3 | 6.4 | 4.92 | 4.10 | ..... | 3.55 |
| 22 | 3.65 | ..... | ..... | 3.75 | 4.35 | 4.43 | 5.3 | 6.6 | 5.0 | 4.20 | ..... | 3.55 |
| 23 | 3.67 | ..... | ..... | 3.75 | 4.30 | 4.40 | 5.2 | 6.9 | 5.0 | 4.25 | ..... | 3.55 |
| 24 | ..... | ..... | ..... | 3.75 | 4.25 | 4.40 | 5.4 | 7.1 | 4.92 | 4.50 | ..... | 3.57 |
| 25 | 3.70 | ..... | ..... | 3.70 | 4.20 | 4.37 | 5.6 | 6.6 | 4.95 | 4.30 | ..... | 3.59 |
| 26 | 3.72 | 4.30 | ..... | 3.70 | 4.15 | 4.37 | 5.65 | 6.7 | 4.95 | 4.25 | ..... | 3.59 |
| 27 | ..... | 4.10 | ..... | 3.70 | 4.15 | 4.40 | 5.6 | 6.1 | 5.1 | 4.20 | ..... | 3.59 |
| 28 | 3.72 | 4.12 | ..... | 3.70 | 4.10 | 4.45 | 5.5 | 5.75 | 4.85 | 4.25 | ..... | 3.60 |
| 29 | ..... | 4.12 | ..... | 3.75 | ..... | 4.48 | 5.35 | 5.6 | 4.82 | 4.25 | ..... | 3.62 |
| 30 | 3.65 | 4.04 | ..... | 3.75 | ..... | 4.50 | 5.25 | 5.95 | 4.75 | 4.20 | ..... | 3.60 |
| 31 | ..... | ..... | ..... | 3.75 | ..... | 4.50 | ..... | 6.9 | ..... | 4.15 | ..... | ..... |

*Daily discharge, in second-feet, of Coffee Creek at Coffee, Cal., for the years ending Sept. 30, 1911–13.*

| Day. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | | | |
| 1 | ..... | 86 | 249 | 133 | 845 | 845 | 1,090 | 460 | 93 | 40 |
| 2 | ..... | 93 | 217 | 158 | 770 | 845 | 1,180 | 460 | 86 | 40 |
| 3 | ..... | 93 | 187 | 158 | 770 | 925 | 1,180 | 408 | 78 | 40 |
| 4 | ..... | 86 | 158 | 146 | 770 | 925 | 845 | 361 | 78 | 40 |
| 5 | ..... | 82 | 158 | 172 | 770 | 925 | 845 | 340 | 72 | 40 |
| 6 | ..... | 81 | 133 | 361 | 700 | 925 | 845 | 319 | 65 | 40 |
| 7 | ..... | 86 | 122 | 319 | 770 | 845 | 885 | 319 | 65 | 41 |
| 8 | ..... | 86 | 111 | 282 | 700 | 845 | 770 | 300 | 65 | 41 |
| 9 | ..... | 90 | 118 | 217 | 700 | 770 | 925 | 300 | 60 | 42 |
| 10 | ..... | 82 | 122 | 202 | 635 | 845 | 925 | 282 | 60 | 42 |
| 11 | ..... | 78 | 126 | 187 | 575 | 845 | 1,000 | 282 | 60 | 42 |
| 12 | ..... | 75 | 133 | 172 | 515 | 770 | 925 | 282 | 60 | 42 |
| 13 | ..... | 74 | 133 | 172 | 460 | 770 | 1,000 | 266 | 60 | 42 |
| 14 | ..... | 72 | 133 | 187 | 460 | 770 | 925 | 249 | 60 | 42 |
| 15 | ..... | 70 | 126 | 187 | 460 | 700 | 1,090 | 249 | 60 | 42 |
| 16 | 178 | 69 | 122 | 217 | 460 | 700 | 1,090 | 233 | 60 | 42 |
| 17 | 172 | 72 | 118 | 266 | 575 | 700 | 845 | 233 | 54 | 43 |
| 18 | 172 | 78 | 118 | 282 | 575 | 635 | 845 | 217 | 54 | 43 |
| 19 | 133 | 102 | 115 | 319 | 575 | 700 | 1,000 | 217 | 54 | 44 |
| 20 | 115 | 102 | 113 | 344 | 635 | 668 | 925 | 202 | 54 | 44 |
| 21 | 111 | 97 | 115 | 408 | 635 | 700 | 845 | 187 | 52 | 44 |
| 22 | 107 | 93 | 122 | 460 | 635 | 770 | 770 | 187 | 52 | 46 |
| 23 | 106 | 93 | 124 | 488 | 770 | 845 | 635 | 158 | 52 | 46 |
| 24 | 106 | 93 | 133 | 515 | 925 | 925 | 635 | 146 | 51 | 46 |
| 25 | 104 | 102 | 133 | 488 | 925 | 845 | 575 | 146 | 51 | 46 |
| 26 | 104 | 106 | 150 | 515 | 1,090 | 845 | 545 | 133 | 50 | 46 |
| 27 | 100 | 111 | 146 | 515 | 845 | 845 | 575 | 133 | 49 | 46 |
| 28 | 97 | 111 | 133 | 515 | 845 | 925 | 545 | 122 | 44 | 46 |
| 29 | 93 | 129 | ..... | 488 | 845 | 925 | 545 | 111 | 44 | 46 |
| 30 | 90 | 187 | ..... | 545 | 925 | 1,000 | 515 | 111 | 42 | 46 |
| 31 | 86 | 319 | ..... | 700 | ..... | 1,090 | ..... | 102 | 40 | ..... |

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 46 | 52 | 41 | 54 | 111 | 133 | ..... | 408 | 2,080 | 342 | 84 | 53 |
| 2 | 46 | 52 | 42 | 54 | 111 | 133 | ..... | 361 | 2,080 | 320 | 81 | 53 |
| 3 | 46 | 54 | 42 | 54 | 106 | 133 | ..... | 361 | 2,300 | 320 | 79 | 64 |
| 4 | 46 | 54 | 44 | 54 | 102 | 133 | ..... | 460 | 2,300 | 280 | 77 | 69 |
| 5 | 46 | 54 | 44 | 54 | 93 | 158 | ..... | 635 | 2,300 | 274 | 75 | 95 |
| 6 | 45 | 56 | 44 | 54 | 102 | 158 | ..... | 700 | 2,190 | 268 | 72 | 148 |
| 7 | 46 | 56 | 44 | 60 | 102 | 158 | ..... | 845 | 2,080 | 262 | 69 | 130 |
| 8 | 46 | 56 | 44 | 65 | 111 | 133 | ..... | 845 | 1,760 | 252 | 66 | 128 |
| 9 | 46 | 56 | 46 | 78 | 122 | 133 | ..... | 845 | 955 | 342 | 64 | 126 |
| 10 | 46 | 56 | 46 | 86 | 133 | 133 | ..... | 925 | 875 | 231 | 61 | 123 |
| 11 | 46 | 56 | 49 | 93 | 158 | 133 | ..... | 925 | 795 | 220 | 58 | 120 |
| 12 | 46 | 60 | 49 | 102 | 158 | 133 | ..... | 1,000 | 715 | 209 | 58 | 114 |
| 13 | 46 | 60 | 49 | 111 | 172 | 133 | ..... | 1,090 | 640 | 198 | 55 | 109 |
| 14 | 46 | 63 | 49 | 111 | 180 | 133 | ..... | 1,090 | 565 | 188 | 53 | 103 |
| 15 | 46 | 63 | 49 | 122 | 187 | 133 | ..... | 1,090 | 490 | 178 | 51 | 91 |
| 16 | 46 | 65 | 49 | 122 | 319 | 133 | ..... | 1,040 | 415 | 178 | 54 | 77 |
| 17 | 46 | 63 | 49 | 122 | 925 | 133 | ..... | 980 | 415 | 152 | 58 | 69 |
| 18 | 47 | 60 | 49 | 122 | 635 | 133 | ..... | 925 | 415 | 145 | 60 | 61 |
| 19 | 47 | 54 | 51 | 133 | 515 | 111 | ..... | 1,000 | 415 | 137 | 60 | 58 |
| 20 | 48 | 54 | 51 | 187 | 282 | 111 | ..... | 925 | 415 | 130 | 60 | 55 |
| 21 | 48 | 52 | 51 | 202 | 234 | 111 | ..... | 1,000 | 415 | 130 | 59 | 53 |
| 22 | 48 | 52 | 52 | 282 | 187 | 133 | ..... | 1,090 | 415 | 120 | 58 | 53 |
| 23 | 48 | 49 | 52 | 635 | 187 | 133 | 282 | 1,090 | 520 | 120 | 57 | 53 |
| 24 | 48 | 46 | 53 | 700 | 172 | 158 | 282 | 1,460 | 485 | 112 | 56 | 53 |
| 25 | 49 | 44 | 53 | 635 | 158 | 187 | 282 | 1,760 | 450 | 103 | 56 | 52 |
| 26 | 49 | 42 | 54 | 282 | 146 | 187 | 319 | 1,760 | 415 | 95 | 56 | 52 |
| 27 | 49 | 42 | 54 | 217 | 146 | 217 | 319 | 2,300 | 365 | 95 | 55 | 52 |
| 28 | 50 | 40 | 54 | 158 | 133 | 249 | 361 | 2,080 | 365 | 95 | 54 | 52 |
| 29 | 50 | 40 | 54 | 133 | 133 | 282 | 408 | 2,080 | 365 | 91 | 54 | 52 |
| 30 | 52 | 40 | 54 | 133 | ..... | 319 | 408 | 2,080 | 365 | 89 | 53 | 52 |
| 31 | 52 | ..... | 54 | 111 | ..... | 340 | ..... | 2,080 | ..... | 87 | 53 | ..... |

*Daily discharge, in second-feet, of Coffee Creek at Coffee, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | | |
| 1 | 53 | 58 | 91 | 80 | 88 | 111 | 228 | 520 | 1,400 | 252 | 111 | 88 |
| 2 | 51 | 60 | 88 | 81 | 95 | 103 | 234 | 520 | 1,310 | 280 | 111 | 91 |
| 3 | 50 | 64 | 86 | 79 | 111 | 111 | 245 | 520 | 1,180 | 288 | 111 | 95 |
| 4 | 48 | 69 | 84 | 77 | 111 | 111 | 262 | 580 | 955 | 280 | 111 | 88 |
| 5 | 46 | 75 | 75 | 77 | 111 | 120 | 270 | 790 | 912 | 252 | 103 | 64 |
| 6 | 45 | 90 | 77 | 75 | 95 | 126 | 280 | 1,220 | 870 | 210 | 100 | 61 |
| 7 | 45 | 105 | 79 | 73 | 103 | 152 | 280 | 1,400 | 752 | 228 | 95 | 59 |
| 8 | 44 | 120 | 81 | 69 | 111 | 194 | 320 | 1,220 | 830 | 194 | 79 | 59 |
| 9 | 44 | 680 | 80 | 69 | 120 | 256 | 320 | 1,220 | 680 | 204 | 79 | 58 |
| 10 | 43 | 500 | 78 | 69 | 120 | 256 | 365 | 870 | 645 | 184 | 75 | 58 |
| 11 | 43 | 400 | 77 | 67 | 130 | 245 | 415 | 830 | 680 | 184 | 73 | 55 |
| 12 | 42 | 300 | 79 | 67 | 130 | 238 | 440 | 680 | 612 | 173 | 84 | 55 |
| 13 | 41 | 245 | 79 | 69 | 141 | 228 | 465 | 680 | 550 | 178 | 84 | 55 |
| 14 | 41 | 228 | 79 | 69 | 152 | 220 | 465 | 680 | 550 | 165 | 84 | 53 |
| 15 | 41 | 184 | 79 | 75 | 152 | 210 | 465 | 790 | 492 | 141 | 84 | 53 |
| 16 | 41 | 160 | 79 | 75 | 178 | 194 | 440 | 1,260 | 440 | 141 | 84 | 51 |
| 17 | 41 | 141 | 79 | 75 | 194 | 200 | 465 | 1,040 | 415 | 134 | 85 | 51 |
| 18 | 41 | 145 | 79 | 75 | 210 | 194 | 492 | 1,220 | 415 | 134 | 85 | 48 |
| 19 | 41 | 148 | 79 | 69 | 194 | 194 | 465 | 1,080 | 492 | 130 | 85 | 48 |
| 20 | 41 | 149 | 79 | 69 | 178 | 188 | 465 | 1,130 | 390 | 130 | 85 | 48 |
| 21 | 47 | 149 | 80 | 69 | 165 | 194 | 580 | 1,500 | 375 | 111 | 86 | 44 |
| 22 | 53 | 150 | 80 | 64 | 165 | 188 | 580 | 1,700 | 415 | 130 | 86 | 44 |
| 23 | 55 | 150 | 80 | 64 | 152 | 178 | 520 | 2,010 | 415 | 141 | 86 | 44 |
| 24 | 56 | 151 | 80 | 64 | 141 | 178 | 645 | 2,230 | 375 | 210 | 86 | 45 |
| 25 | 58 | 151 | 80 | 58 | 130 | 170 | 790 | 1,700 | 390 | 152 | 87 | 47 |
| 26 | 60 | 152 | 80 | 58 | 120 | 170 | 830 | 1,800 | 390 | 141 | 87 | 47 |
| 27 | 60 | 111 | 80 | 58 | 120 | 178 | 790 | 1,220 | 465 | 130 | 87 | 47 |
| 28 | 60 | 115 | 80 | 58 | 111 | 194 | 715 | 912 | 342 | 141 | 87 | 48 |
| 29 | 56 | 115 | 80 | 64 | ..... | 204 | 612 | 790 | 329 | 141 | 88 | 50 |
| 30 | 53 | 101 | 80 | 64 | ..... | 210 | 550 | 1,080 | 300 | 130 | 88 | 48 |
| 31 | 56 | ..... | 80 | 64 | ..... | 210 | ..... | 2,010 | ..... | 120 | 88 | ..... |

NOTE.—Discharge determined from two fairly well defined rating curves applicable as follows: Dec. 16, 1910, to June 8, 1912; June 9, 1912, to Sept. 30, 1913. Discharge interpolated for days when gage was not read. The above estimates supersede those published in Water-Supply Papers 300, pp. 903 and 904; 311, pp. 264 and 265; and 331, p. 406.

*Monthly discharge of Coffee Creek at Coffee, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1910–11. | | | | | |
| December 16–31 | 178 | 86 | 117 | 3,710 | B. |
| January | 319 | 69 | 99.9 | 6,140 | B. |
| February | 249 | 111 | 138 | 7,660 | B. |
| March | 700 | 133 | 326 | 20,000 | B. |
| April | 1,090 | 460 | 705 | 42,000 | B. |
| May | 1,090 | 635 | 828 | 50,900 | B. |
| June | 1,180 | 515 | 844 | 50,200 | B. |
| July | 460 | 102 | 242 | 14,900 | B. |
| August | 93 | 40 | 58.9 | 3,620 | B. |
| September | 46 | 40 | 43.0 | 2,560 | B. |
| The period | ..... | ..... | ..... | 202,000 | |
| 1911–12. | | | | | |
| October | 52 | 45 | 47.3 | 2,910 | B. |
| November | 65 | 40 | 53.0 | 3,150 | B. |
| December | 54 | 41 | 48.9 | 3,010 | B. |
| January | 700 | 54 | 172 | 10,600 | B. |
| February | 925 | 93 | 211 | 12,100 | B. |
| March | 340 | 111 | 162 | 9,960 | B. |
| April 23–30 | 408 | 282 | 333 | 5,280 | B. |
| May | 2,300 | 361 | 1,140 | 70,100 | B. |
| June | 2,300 | 365 | 945 | 56,200 | B. |
| July | 342 | 87 | 183 | 11,300 | B. |
| August | 84 | 51 | 61.5 | 3,780 | C. |
| September | 148 | 52 | 79.0 | 4,700 | C. |

*Monthly discharge of Coffee Creek at Coffee, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Month. | Discharge in second-feet. | | | Run-off (total in (acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1912–13. | | | | | |
| October | 60 | 41 | 48.3 | 2,970 | C. |
| November | 680 | 58 | 176 | 10,500 | C. |
| December | 91 | 75 | 80.2 | 4,930 | C. |
| January | 81 | 58 | 69.2 | 4,250 | C. |
| February | 210 | 88 | 137 | 7,610 | B. |
| March | 256 | 103 | 185 | 11,400 | B. |
| April | 830 | 228 | 466 | 27,700 | A. |
| May | 2,230 | 520 | 1,140 | 70,100 | A. |
| June | 1,400 | 300 | 612 | 36,400 | A. |
| July | 288 | 111 | 175 | 10,800 | A. |
| August | 111 | 73 | 89.2 | 5,480 | C. |
| September | 95 | 44 | 56.7 | 3,370 | C. |
| The year | 2,230 | 41 | 270 | 196,000 | |

## EAST FORK OF TRINITY RIVER NEAR TRINITY CENTER, CAL.

LOCATION.—In the SW. ¼ sec. 15, T. 36 N., R. 7 W., in Shasta National Forest, at highway bridge 2¼ miles southeast of Trinity Center, and one-fourth mile above junction with Trinity River.

RECORDS AVAILABLE.—December 15, 1910, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff on downstream end of left abutment of bridge.

CHANNEL.—Gravel and small bowlders; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

DIVERSIONS.—About 400 acres are irrigated from this stream. The principal diversion is the Trinity Farm & Cattle Co.'s canal, which heads about 4 miles above the station. Some water is also used for mining purposes.

ACCURACY.—Rating curve fairly well defined; results fair.

COOPERATION.—Station maintained in cooperation with United States Forest Service.

*Discharge measurements of East Fork of Trinity Center, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.-ft.* |
| Feb. 3 | G. H. Canfield | 4.80 | 230 | May 2 | G. H. Canfield | 5.18 | 382 |
| Mar. 28 | do | 4.70 | 187 | 2 | do | 5.14 | 358 |
| 28 | do | 4.70 | 193 | Sept. 24 | Lasley Lee | 3.45 | 5.8 |

*Daily gage height, in feet, East Fork of Trinity River near Trinity Center, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 5.2 | | 4.20 | | |
| 2 | 3.70 | | 4.30 | | | | 5.15 | | | | |
| 3 | | 3.90 | | 4.80 | | | | | | | |
| 4 | | | | 4.75 | 4.70 | | | | | | |
| 5 | | | | 4.75 | 4.60 | | 5.6 | | | 3.70 | |
| 6 | 3.71 | | | 4.75 | | | | | | | |
| 7 | | 4.75 | 4.28 | 4.75 | 5.05 | | 6.1 | | 4.00 | 3.65 | |
| 8 | | | | 4.85 | | 5.45 | | | | | |
| 9 | | | | 4.95 | | | 6.7 | 4.75 | | | |
| 10 | | | | | 5.6 | | | 4.68 | | | |
| 11 | | | | 5.1 | | | | | | 3.55 | |
| 12 | | | | | | 6.0 | | | | | |
| 13 | | | | 5.1 | 5.2 | | | 4.45 | | | |
| 14 | | 5.8 | | | 5.1 | | 5.5 | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | 4.90 | | 5.65 | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | 5.15 | 4.95 | | | | | | |
| 19 | | | | 5.15 | | | | | | | |
| 20 | | | | | 4.90 | | | | | | |
| 21 | | 4.60 | | 4.90 | | 5.7 | 5.65 | | | | |
| 22 | | | | 4.90 | | | | | | | |
| 23 | 3.90 | | | | 4.80 | | | | | | |
| 24 | | | | 4.70 | | 5.85 | 5.7 | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | 4.65 | | | | | | |
| 27 | 3.91 | | | 4.60 | 4.70 | | | | | | |
| 28 | | | | | 4.75 | | | | | | |
| 29 | | | | | 4.90 | | | 4.40 | 3.85 | | 3.40 |
| 30 | | 4.35 | | | | | | | | | |
| 31 | | | | | 5.5 | | | | | | |

*Daily discharge, in second-feet, of East Fork of Trinity River near Trinity Center, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 390 | | 76 | | |
| 2 | 19 | | 94 | | | | 367 | | | | |
| 3 | | 36 | | 226 | | | | | | | |
| 4 | | | | 209 | 192 | | | | | | |
| 5 | | | | 209 | 162 | | 620 | | | 19 | |
| 6 | 20 | | | 209 | | | | | | | |
| 7 | | 209 | 90 | 209 | 323 | | 1,020 | | 47 | 16 | |
| 8 | | | | 244 | | 525 | | | | | |
| 9 | | | | 282 | | | 1,630 | 209 | | | |
| 10 | | | | | 620 | | | 186 | | | |
| 11 | | | | 344 | | | | | | 10 | |
| 12 | | | | | | 930 | | | | | |
| 13 | | | | 344 | 390 | | | 125 | | | |
| 14 | | 765 | | | 344 | | 555 | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | 262 | | 655 | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | 367 | 282 | | | | | | |
| 19 | | | | 367 | | | | | | | |
| 20 | | | | | 262 | | | | | | |
| 21 | | 162 | | 262 | | 690 | 655 | | | | |
| 22 | | | | 262 | | | | | | | |
| 23 | 36 | | | | 226 | | | | | | |
| 24 | | | | 192 | | 805 | 690 | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | 177 | | | | | | |
| 27 | 37 | | | 162 | 192 | | | | | | |
| 28 | | | | | 209 | | | | | | |
| 29 | | | | | 262 | | | 114 | 32 | | 5 |
| 30 | | 104 | | | | | | | | | |
| 31 | | | | | 555 | | | | | | |

NOTE.—Discharge determined from a well-defined rating curve.

## SWIFT CREEK NEAR TRINITY CENTER, CAL.

LOCATION.—In the E. ½ sec. 13, T. 36 N., R. 8 W., in Shasta National Forest, one-fourth mile above North Fork of Swift Creek, and about 2½ miles southwest of Trinity Center.

RECORDS AVAILABLE.—December 17, 1910, to September 30, 1913 (fragmentary).

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections on left bank 100 feet below foot-log; lower section is bolted to bowlder; upper section is fastened to cedar tree 6 feet back from lower section. From August 19, 1911, to March 20, 1912, a temporary vertical staff at foot-log was read; independent datum.

CHANNEL.—Bowlders; rough; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from foot-log or by wading.

ACCURACY.—Rating curves fairly well defined; results fair for periods for which gage heights were recorded.

COOPERATION.—Gage-height record furnished by United States Forest Service.

*Discharge measurements of Swift Creek near Trinity Center, Cal., during the year ending Sept. 30, 1913.*

| Date | Made by— | Gage height, gage at foot log. | Gage height. | Discharge. | Date. | Made by— | Gage height, gage at foot log. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Feb. 4 | G. H. Canfield.. | 1.88 | 1.96 | 54 | June 3 | G. H. Canfield.. | ..... | 3.06 | 460 |
| Apr. 30 | .....do..... | 2.30 | 2.48 | 173 | Sept. 23 | Lasley Lee..... | ..... | 1.54 | 17 |
| May 1 | .....do..... | 2.23 | 2.42 | 154 | | | | | |

*Daily gage height, in feet, of Swift Creek River near Trinity Center, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Feb. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.64 | ..... | ..... | ..... | ..... | 2.42 | ..... | ..... | 1.90 | ..... |
| 2 | ..... | ..... | ..... | ..... | ..... | ..... | 3.05 | ..... | ..... | ..... |
| 3 | ..... | 1.71 | ..... | ..... | ..... | ..... | 3.05 | ..... | ..... | ..... |
| 4 | ..... | ..... | ..... | 1.96 | ..... | ..... | ..... | ..... | ..... | ..... |
| 5 | ..... | ..... | ..... | ..... | ..... | 2.70 | ..... | ..... | ..... | ..... |
| 6 | ..... | ..... | ..... | ..... | ..... | ..... | 2.85 | ..... | ..... | ..... |
| 7 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.15 | ..... | ..... |
| 9 | ..... | ..... | 1.86 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.58 |
| 13 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 14 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 16 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 17 | ..... | ..... | ..... | ..... | 2.35 | ..... | ..... | ..... | ..... | ..... |
| 18 | ..... | ..... | ..... | ..... | ..... | 3.4 | ..... | ..... | ..... | ..... |
| 19 | ..... | ..... | ..... | ..... | ..... | ..... | 2.45 | ..... | ..... | ..... |
| 20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 21 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 22 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 23 | ..... | ..... | ..... | ..... | 2.68 | ..... | ..... | ..... | ..... | 1.54 |
| 24 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.50 |
| 25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 26 | ..... | ..... | ..... | ..... | ..... | ..... | 2.40 | ..... | ..... | ..... |
| 27 | 1.69 | ..... | ..... | ..... | ..... | ..... | ..... | 1.95 | ..... | ..... |
| 28 | ..... | ..... | ..... | ..... | 2.70 | ..... | ..... | ..... | ..... | ..... |
| 29 | ..... | ..... | ..... | ..... | ..... | 2.90 | ..... | ..... | ..... | ..... |
| 30 | ..... | ..... | ..... | ..... | 2.48 | ..... | ..... | ..... | 1.62 | ..... |
| 31 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

NOTE.—All gage heights refer to original gage. Temporary gage washed out between May 1 and June 3, 1913, and was not replaced.

*Daily discharge, in second-feet, of Swift Creek near Trinity Center, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Dec. | Jan. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1910–11. | | | | | | | | |
| 1 | | 52 | | | | | | |
| 2 | | | | | | | | |
| 3 | | 42 | | | | | | |
| 4 | | 52 | | 468 | | | | |
| 5 | | | | 534 | | | 25 | |
| 6 | | 38 | 302 | | | | | 18 |
| 7 | | | | | | | | |
| 8 | | | | 408 | | 78 | | |
| 9 | | 38 | | | 408 | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | 16 |
| 14 | | | | | 534 | | | |
| 15 | | 58 | | | | | | |
| 16 | | | | | | | | |
| 17 | 134 | | | | | | | 16 |
| 18 | | 75 | | | | 70 | | |
| 19 | | | | 272 | | | 25 | |
| 20 | 114 | | | 264 | | | | |
| 21 | | | | | | | | |
| 22 | 94 | | | | 164 | | | |
| 23 | | | | | | | | 18 |
| 24 | 94 | | | 468 | | 39 | 20 | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |
| 27 | 64 | | | 354 | | | | |
| 28 | | | | | | | | |
| 29 | 64 | | | | | | | |
| 30 | | | | | | 29 | | |
| 31 | 58 | | | | | | | |

| Day. | Oct. | Nov. | Feb. | Mar. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | |
| 1 | 16 | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | 16 | | | | | | | |
| 5 | | | | | 154 | | 135 | 38 | |
| 6 | | | 99 | | | | | | |
| 7 | | | | | | | | | 54 |
| 8 | | | | | | | 122 | | |
| 9 | 17 | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | 366 | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | 98 | | |
| 16 | | | | | | 312 | | 29 | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | 211 | | | | | | |
| 20 | | | | 83 | | | | | |
| 21 | | | 140 | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | 16 | 110 | | | 148 | | | 31 |
| 26 | | | | | | | | | |
| 27 | | | | | | | 60 | | |
| 28 | 16 | | | | 550 | | 60 | 25 | |
| 29 | | | 83 | | | | | 24 | |
| 30 | | | | | | | | | |
| 31 | | | | | | | | | |

*Daily discharge, in second-feet, of Swift Creek near Trinity Center, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Feb. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | |
| 1 | 24 | | | | | 154 | | | 50 | |
| 2 | | | | | | | 455 | | | |
| 3 | | 30 | | | | | 455 | | | |
| 4 | | | | 57 | | | | | | |
| 5 | | | | | | 264 | | | | |
| 6 | | | | | | | 339 | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | 88 | | |
| 9 | | | 46 | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | 20 |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | 135 | | | | | |
| 18 | | | | | | 684 | | | | |
| 19 | | | | | | | 164 | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | 255 | | | | | 17 |
| 24 | | | | | | | | | | 14 |
| 25 | | | | | | | | | | |
| 26 | | | | | | | 148 | | | |
| 27 | 28 | | | | | | | 56 | | |
| 28 | | | | | 264 | | | | | |
| 29 | | | | | | 366 | | | | |
| 30 | | | | | 174 | | | | 23 | |
| 31 | | | | | | | | | | |

NOTE.—Daily discharge determined from rating curves applicable as follows: Original gage: Dec. 17, 1910, to June 14, 1911, fairly well defined between 100 and 400 second-feet; June 22, 1911, to Aug. 5, 1911, and May 5, 1912, to Sept. 30, 1913, well defined; temporary gage at foot-log: Aug. 19, 1911, to Mar. 20, 1912, well defined. The above figures supersede those published in Water-Supply Paper 311, p. 269.

## NORTH FORK OF TRINITY RIVER AT HELENA, CAL.

LOCATION.—In sec. 28, T. 34 N., R. 11 W., just above highway bridge at Helena, about one-fourth mile above junction with Trinity River.

RECORDS AVAILABLE.—August 23, 1911, to Sept, 30, 1913.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff fastened to an alder tree on left bank, 150 feet above bridge.

CHANNEL.—Small bowlders and gravel; permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

ACCURACY.—Rating curve well defined at low and medium stages. High-water estimates approximate; otherwise record is good.

*Discharge measurements of North Fork of Trinity River at Helena, Cal., during the year ending Sept. 30, 1913.*

| Date. | Made by— | Gage height. | Discharge. | Date. | Made by— | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|
| | | *Feet.* | *Sec.-ft.* | | | *Feet.* | *Sec.ft.* |
| Feb. 8 | G. H. Canfield | 3.07 | 619 | May 28 | G. H. Canfield | 3.14 | 657 |
| Mar. 19 | do | 2.85 | 498 | Sept. 21 | Lasley Lee | 1.43 | 34 |
| Apr. 28 | do | 3.28 | 725 | | | | |

*Daily gage height, in feet, of North Fork of Trinity River at Helena, Cal., for the year ending Sept. 30, 1913.*

[H. L. Knowles, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.55 | 1.8 | 2.1 | 2.85 | 2.8 | 2.65 | 3.8 | 3.35 | 3.2 | 2.15 | 2.0 | 1.3 |
| 2 | 1.55 | 1.85 | 2.1 | 2.8 | 2.95 | 2.65 | 3.8 | 3.3 | 3.15 | 2.15 | 1.95 | 1.3 |
| 3 | 1.5 | 1.9 | 2.1 | 2.8 | 3.1 | 2.65 | 3.9 | 3.3 | 3.1 | 2.15 | 1.95 | 1.3 |
| 4 | 1.5 | 1.9 | 2.1 | 2.7 | 3.1 | 2.7 | 3.9 | 3.3 | 3.1 | 2.1 | 1.9 | 1.3 |
| 5 | 1.5 | 3.4 | 2.1 | 2.6 | 3.1 | 2.75 | 3.8 | 3.4 | 3.1 | 2.2 | 1.9 | 1.3 |
| 6 | 1.48 | 6.7 | 2.05 | 2.55 | 3.1 | 2.9 | 3.7 | 3.6 | 3.35 | 2.15 | 1.9 | 1.3 |
| 7 | 1.45 | 5.0 | 2.05 | 2.5 | 3.1 | 3.1 | 3.7 | 3.6 | 3.15 | 2.1 | 1.9 | 1.3 |
| 8 | 1.45 | 4.2 | 2.0 | 2.5 | 3.1 | 3.25 | 3.7 | 3.8 | 3.0 | 2.1 | 1.9 | 1.3 |
| 9 | 1.45 | 4.6 | 2.0 | 2.5 | 3.1 | 3.4 | 3.8 | 3.8 | 2.9 | 2.05 | 1.85 | 1.3 |
| 10 | 1.45 | 3.6 | 2.0 | 2.5 | 3.1 | 3.5 | 3.9 | 3.8 | 2.85 | 2.05 | 1.8 | 1.3 |
| 11 | 1.45 | 3.05 | 2.0 | 2.45 | 3.1 | 3.45 | 4.0 | 3.8 | 2.85 | 2.0 | 1.8 | 1.3 |
| 12 | 1.45 | 3.45 | 2.0 | 2.45 | 3.15 | 3.35 | 4.0 | 3.7 | 2.75 | 2.0 | 1.7 | 1.3 |
| 13 | 1.45 | 3.7 | 2.1 | 2.45 | 3.2 | 3.2 | 3.9 | 3.6 | 2.7 | 2.0 | 1.65 | 1.3 |
| 14 | 1.45 | 4.2 | 2.1 | 2.45 | 3.25 | 3.2 | 3.8 | 3.5 | 2.65 | 2.0 | 1.6 | 1.35 |
| 15 | 1.45 | 4.0 | 3.3 | 2.45 | 3.4 | 3.15 | 3.8 | 3.45 | 2.55 | 2.0 | 1.6 | 1.35 |
| 16 | 1.45 | 3.8 | 3.3 | 2.45 | 3.5 | 3.05 | 3.7 | 3.45 | 2.5 | 2.0 | 1.55 | 1.35 |
| 17 | 1.45 | 3.6 | 3.3 | 2.45 | 3.6 | 2.95 | 3.7 | 3.35 | 2.45 | 2.0 | 1.45 | 1.35 |
| 18 | 1.45 | 3.45 | 3.25 | 2.5 | 3.45 | 2.9 | 3.6 | 3.35 | 2.4 | 1.95 | 1.4 | 1.35 |
| 19 | 1.45 | 3.3 | 3.15 | 2.6 | 3.35 | 2.9 | 3.6 | 3.35 | 2.4 | 1.95 | 1.4 | 1.35 |
| 20 | 1.45 | 3.15 | 3.1 | 2.6 | 3.3 | 2.9 | 3.45 | 3.35 | 2.4 | 1.95 | 1.4 | 1.35 |
| 21 | 1.45 | 2.95 | 3.05 | 2.6 | 3.25 | 3.0 | 3.45 | 3.4 | 2.4 | 1.95 | 1.4 | 1.35 |
| 22 | 1.45 | 2.6 | 3.0 | 2.6 | 3.15 | 3.05 | 3.5 | 3.45 | 2.35 | 1.95 | 1.35 | 1.35 |
| 23 | 1.45 | 2.55 | 2.9 | 2.55 | 3.0 | 3.1 | 3.6 | 3.5 | 2.35 | 3.2 | 1.35 | 1.35 |
| 24 | 1.45 | 2.48 | 2.85 | 2.55 | 2.9 | 3.2 | 3.6 | 3.5 | 2.35 | 2.4 | 1.35 | 1.35 |
| 25 | 1.6 | 2.4 | 2.75 | 2.55 | 2.8 | 3.2 | 3.7 | 3.6 | 2.4 | 2.15 | 1.35 | 1.35 |
| 26 | 1.65 | 2.3 | 2.65 | 2.5 | 2.8 | 3.4 | 3.8 | 3.5 | 2.4 | 2.2 | 1.3 | 1.35 |
| 27 | 1.7 | 2.25 | 2.55 | 2.5 | 2.75 | 3.6 | 3.5 | 3.5 | 2.4 | 2.1 | 1.35 | 1.35 |
| 28 | 1.8 | 2.15 | 2.65 | 2.55 | 2.65 | 3.8 | 3.35 | 3.2 | 2.35 | 2.05 | 1.35 | 1.35 |
| 29 | 1.8 | 2.15 | 2.7 | 2.55 | ..... | 3.8 | 3.3 | 3.25 | 2.25 | 2.05 | 1.35 | 1.35 |
| 30 | 1.8 | 2.1 | 3.15 | 2.65 | ..... | 3.9 | 3.3 | 3.2 | 2.2 | 2.0 | 1.3 | 1.35 |
| 31 | 1.85 | ..... | 3.0 | 2.7 | ..... | 3.9 | ..... | 3.2 | ..... | 2.0 | 1.3 | ..... |

NOTE.—Maximum recorded gage height: Nov. 6, 1912, 7.2 feet at 8 a. m.

*Daily discharge, in second-feet, of North Fork of Trinity River at Helena, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Aug. | Sept. | Day. | Aug. | Sept. | Day. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1911. | | | 1911. | | | 1911. | | |
| 1 | ..... | 24 | 11 | ..... | 31 | 21 | ..... | 28 |
| 2 | ..... | 22 | 12 | ..... | 28 | 22 | ..... | 28 |
| 3 | ..... | 22 | 13 | ..... | 28 | 23 | 31 | 28 |
| 4 | ..... | 22 | 14 | ..... | 28 | 24 | 31 | 28 |
| 5 | ..... | 22 | 15 | ..... | 28 | 25 | 31 | 36 |
| 6 | ..... | 22 | 16 | ..... | 28 | 26 | 31 | 36 |
| 7 | ..... | 36 | 17 | ..... | 28 | 27 | 28 | 31 |
| 8 | ..... | 31 | 18 | ..... | 28 | 28 | 28 | 31 |
| 9 | ..... | 31 | 19 | ..... | 28 | 29 | 28 | 31 |
| 10 | ..... | 31 | 20 | ..... | 28 | 30 | 24 | 31 |
| | | | | | | 31 | 24 | ..... |

*Daily discharge, in second-feet, of North Fork of Trinity River at Helena, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 31 | 31 | 36 | 40 | 397 | 327 | 550 | 2,080 | 920 | 262 | 102 | 36 |
| 2 | 31 | 31 | 36 | 38 | 397 | 327 | 550 | 1,760 | 920 | 262 | 102 | 36 |
| 3 | 31 | 31 | 34 | 38 | 397 | 297 | 522 | 1,450 | 920 | 262 | 102 | 36 |
| 4 | 31 | 31 | 34 | 36 | 397 | 372 | 550 | 1,180 | 920 | 262 | 102 | 62 |
| 5 | 31 | 31 | 34 | 36 | 397 | 447 | 550 | 1,040 | 920 | 242 | 90 | 90 |
| 6 | 31 | 31 | 50 | 36 | 422 | 522 | 550 | 1,110 | 920 | 242 | 90 | 327 |
| 7 | 31 | 31 | 70 | 70 | 472 | 522 | 522 | 1,180 | 860 | 262 | 90 | 224 |
| 8 | 40 | 31 | 62 | 172 | 860 | 522 | 522 | 1,180 | 830 | 262 | 90 | 189 |
| 9 | 40 | 31 | 53 | 372 | 860 | 472 | 522 | 1,180 | 830 | 242 | 80 | 172 |
| 10 | 40 | 46 | 50 | 472 | 522 | 447 | 604 | 1,040 | 800 | 242 | 80 | 157 |
| 11 | 40 | 38 | 46 | 577 | 497 | 422 | 577 | 1,040 | 800 | 224 | 80 | 142 |
| 12 | 40 | 36 | 40 | 577 | 497 | 422 | 577 | 1,040 | 800 | 224 | 80 | 142 |
| 13 | 46 | 36 | 40 | 1,310 | 577 | 472 | 550 | 980 | 742 | 224 | 70 | 142 |
| 14 | 46 | 36 | 40 | 1,180 | 604 | 472 | 522 | 980 | 714 | 224 | 70 | 128 |
| 15 | 46 | 36 | 40 | 632 | 950 | 497 | 522 | 980 | 660 | 206 | 70 | 120 |
| 16 | 40 | 46 | 40 | 372 | 1,680 | 497 | 522 | 980 | 577 | 206 | 70 | 114 |
| 17 | 36 | 142 | 40 | 282 | 4,120 | 497 | 497 | 980 | 577 | 206 | 70 | 109 |
| 18 | 31 | 90 | 40 | 242 | 2,080 | 497 | 497 | 920 | 522 | 206 | 70 | 90 |
| 19 | 31 | 62 | 40 | 206 | 1,450 | 522 | 472 | 920 | 497 | 206 | 62 | 90 |
| 20 | 31 | 40 | 40 | 206 | 1,180 | 550 | 422 | 920 | 472 | 206 | 62 | 102 |
| 21 | 31 | 38 | 40 | 224 | 920 | 550 | 422 | 920 | 422 | 206 | 53 | 90 |
| 22 | 31 | 36 | 40 | 189 | 860 | 522 | 422 | 920 | 372 | 189 | 46 | 80 |
| 23 | 31 | 36 | 40 | 172 | 800 | 522 | 397 | 920 | 350 | 128 | 46 | 70 |
| 24 | 31 | 36 | 40 | 577 | 771 | 522 | 372 | 920 | 327 | 128 | 46 | 62 |
| 25 | 31 | 36 | 40 | 4,120 | 714 | 522 | 350 | 920 | 304 | 114 | 40 | 53 |
| 26 | 31 | 36 | 40 | 3,600 | 660 | 522 | 327 | 920 | 304 | 114 | 40 | 53 |
| 27 | 31 | 36 | 40 | 2,400 | 604 | 577 | 327 | 920 | 304 | 114 | 40 | 50 |
| 28 | 31 | 36 | 46 | 1,760 | 497 | 632 | 327 | 920 | 282 | 114 | 40 | 46 |
| 29 | 31 | 36 | 46 | 687 | 422 | 632 | 397 | 920 | 282 | 114 | 40 | 46 |
| 30 | 31 | 36 | 40 | 604 | ..... | 632 | 1,180 | 980 | 262 | 114 | 40 | 46 |
| 31 | 31 | ..... | 40 | 472 | ..... | 577 | ..... | 920 | ..... | 102 | 36 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 46 | 90 | 172 | 497 | 472 | 397 | 1,040 | 771 | 687 | 189 | 142 | 24 |
| 2 | 46 | 102 | 172 | 472 | 550 | 397 | 1,040 | 742 | 660 | 189 | 128 | 24 |
| 3 | 40 | 114 | 172 | 472 | 632 | 397 | 1,110 | 742 | 632 | 189 | 128 | 24 |
| 4 | 40 | 114 | 172 | 422 | 632 | 422 | 1,110 | 742 | 632 | 172 | 114 | 24 |
| 5 | 40 | 800 | 172 | 372 | 632 | 447 | 1,040 | 800 | 632 | 206 | 114 | 24 |
| 6 | 38 | 3,320 | 157 | 350 | 632 | 522 | 980 | 920 | 771 | 189 | 114 | 24 |
| 7 | 36 | 1,920 | 157 | 327 | 632 | 632 | 980 | 920 | 660 | 172 | 114 | 24 |
| 8 | 36 | 1,310 | 142 | 327 | 632 | 714 | 980 | 1,040 | 577 | 172 | 114 | 24 |
| 9 | 36 | 1,600 | 142 | 327 | 632 | 800 | 1,040 | 1,040 | 522 | 157 | 102 | 24 |
| 10 | 36 | 920 | 142 | 327 | 632 | 860 | 1,110 | 1,040 | 497 | 157 | 90 | 24 |
| 11 | 36 | 604 | 142 | 304 | 632 | 830 | 1,180 | 1,040 | 497 | 142 | 90 | 24 |
| 12 | 36 | 830 | 142 | 304 | 660 | 771 | 1,180 | 980 | 447 | 142 | 70 | 24 |
| 13 | 36 | 980 | 172 | 304 | 687 | 687 | 1,110 | 920 | 422 | 142 | 62 | 24 |
| 14 | 36 | 1,310 | 172 | 304 | 714 | 687 | 1,040 | 860 | 397 | 142 | 53 | 28 |
| 15 | 36 | 1,180 | 742 | 304 | 800 | 660 | 1,040 | 830 | 350 | 142 | 53 | 28 |
| 16 | 36 | 1,040 | 742 | 304 | 860 | 604 | 980 | 830 | 327 | 142 | 46 | 28 |
| 17 | 36 | 920 | 742 | 304 | 920 | 550 | 980 | 771 | 304 | 142 | 36 | 28 |
| 18 | 36 | 830 | 714 | 327 | 830 | 522 | 920 | 771 | 282 | 128 | 31 | 28 |
| 19 | 36 | 742 | 660 | 372 | 771 | 522 | 920 | 771 | 282 | 128 | 31 | 28 |
| 20 | 36 | 660 | 632 | 372 | 742 | 522 | 830 | 771 | 282 | 128 | 31 | 28 |
| 21 | 36 | 550 | 604 | 372 | 714 | 577 | 830 | 800 | 282 | 128 | 31 | 28 |
| 22 | 36 | 372 | 577 | 372 | 660 | 604 | 860 | 830 | 262 | 128 | 28 | 28 |
| 23 | 36 | 350 | 522 | 350 | 577 | 632 | 920 | 860 | 262 | 687 | 28 | 28 |
| 24 | 36 | 318 | 497 | 350 | 522 | 687 | 920 | 860 | 262 | 282 | 28 | 28 |
| 25 | 53 | 282 | 447 | 350 | 472 | 687 | 980 | 920 | 282 | 189 | 28 | 28 |
| 26 | 62 | 242 | 397 | 327 | 472 | 800 | 1,040 | 860 | 282 | 206 | 24 | 28 |
| 27 | 70 | 224 | 350 | 327 | 447 | 920 | 860 | 860 | 282 | 172 | 28 | 28 |
| 28 | 90 | 189 | 397 | 350 | 397 | 1,040 | 771 | 687 | 262 | 157 | 28 | 28 |
| 29 | 90 | 189 | 422 | 350 | ..... | 1,040 | 742 | 714 | 224 | 157 | 28 | 28 |
| 30 | 90 | 172 | 660 | 397 | ..... | 1,110 | 742 | 687 | 206 | 142 | 24 | 28 |
| 31 | 102 | ..... | 570 | 422 | ..... | 1,110 | ..... | 687 | ..... | 142 | 24 | ..... |

NOTE.—Discharge determined from a rating curve well defined below 1,200 second-feet. High-water estimates are based on extension of rating curve and are only approximate.

*Monthly discharge of North Fork of Trinity River at Helena, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| August 23–31 | 31 | 24 | 28.4 | 507 | C. |
| September | 36 | 22 | 28.5 | 1,700 | C. |
| 1911–12. | | | | | |
| October | 46 | 31 | 34.4 | 2,120 | B. |
| November | 142 | 31 | 41.6 | 2,480 | B. |
| December | 70 | 34 | 42.5 | 2,610 | B. |
| January | 4,120 | 36 | 700 | 43,000 | C. |
| February | 4,120 | 397 | 862 | 49,600 | C. |
| March | 632 | 327 | 497 | 30,600 | A. |
| April | 1,180 | 327 | 504 | 30,000 | A. |
| May | 2,080 | 920 | 1,070 | 65,800 | B. |
| June | 920 | 262 | 614 | 36,500 | A. |
| July | 262 | 102 | 197 | 12,100 | B. |
| August | 102 | 36 | 67.7 | 4,160 | B. |
| September | 327 | 36 | 103 | 6,130 | B. |
| The year | 4,120 | 31 | 393 | 285,000 | |
| 1912–13. | | | | | |
| October | 102 | 36 | 46.9 | 2,880 | B. |
| November | 3,320 | 90 | 742 | 44,200 | B. |
| December | 742 | 142 | 384 | 23,600 | A. |
| January | 497 | 304 | 357 | 22,000 | A. |
| February | 920 | 397 | 641 | 35,600 | A. |
| March | 1,110 | 397 | 682 | 41,900 | A. |
| April | 1,180 | 742 | 976 | 58,100 | A. |
| May | 1,040 | 687 | 841 | 51,700 | A. |
| June | 687 | 206 | 416 | 24,800 | A. |
| July | 687 | 128 | 179 | 11,000 | B. |
| August | 142 | 24 | 63.3 | 3,890 | B. |
| September | 28 | 24 | 26.3 | 1,560 | B. |
| The year | 3,320 | 24 | 444 | 321,000 | |

## SOUTH FORK OF TRINITY RIVER NEAR CHINA FLAT, CAL.

LOCATION.—In sec. 17, T. 6 N., R. 5 E., at suspension footbridge, one-eighth mile above junction with Trinity River, and about 6 miles southeast of China Flat.

RECORDS AVAILABLE.—October 12, 1911, to August 10, 1913, when station was discontinued.

DRAINAGE AREA.—Not measured.

GAGE.—Vertical staff in two sections bolted to rock ledge on right bank 30 feet above bridge.

CHANNEL.—Bowlders and gravel; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge below gage or by wading.

ACCURACY.—Trinity River at medium and high stages causes backwater at station, and discharge estimates have been prepared for these periods by correcting observed gage heights for backwater and applying fairly well defined rating curves developed for free-flow conditions. All estimates except for low water subject to considerable error on account of uncertainty as to amount of backwater.

*Discharge measurements of South Fork of Trinity River near China Flat, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 28 | 4.21 | 300 | Apr. 20 | 7.95 | 2,550 | June 14 | 5.14 | 630 |
| Jan. 23 | 7.90 | 3,510 | 28 | 8.00 | 2,030 | Sept. 13 | 3.24 | 102 |
| Mar. 3 | 6.44 | 1,890 | 30 | 7.28 | 1,890 | 13 | 3.24 | 99 |
| Apr. 19 | 8.13 | 2,760 | | | | | | |

*Daily gage height, in feet, of South Fork of Trinity River near China Flat, Cal., for the year ending Sept. 30, 1913.*

[Nels Anderberg, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.80 | 4.12 | 5.1 | 7.8 | 8.1 | 6.3 | 9.2 | 7.0 | 6.8 | 4.45 | 3.89 |
| 2 | 3.80 | 4.05 | 5.0 | 7.4 | 8.4 | 6.3 | 9.0 | 6.8 | 6.9 | 4.38 | 3.75 |
| 3 | 3.80 | 4.15 | 5.0 | 7.0 | 8.4 | 6.4 | 8.6 | 6.6 | 7.0 | 4.42 | 3.72 |
| 4 | 3.78 | 4.20 | 5.1 | 6.8 | 8.1 | 6.6 | 8.6 | 6.6 | 6.8 | 4.35 | 3.70 |
| 5 | 3.78 | 5.2 | 5.0 | 6.6 | 7.8 | 6.6 | 10.4 | 6.9 | 6.5 | 4.38 | 3.68 |
| 6 | 3.75 | 12.2 | 4.9 | 6.35 | 7.8 | 6.8 | 10.0 | 7.3 | 6.3 | 4.40 | 3.65 |
| 7 | 3.75 | 10.0 | 4.8 | 6.1 | 8.0 | 7.0 | 9.5 | 7.8 | 6.1 | 4.32 | 3.60 |
| 8 | 3.72 | 7.5 | 4.8 | 6.4 | 8.2 | 7.5 | 9.0 | 8.0 | 6.0 | 4.28 | 3.58 |
| 9 | 3.70 | 6.6 | 4.75 | 6.15 | 8.5 | 7.9 | 8.8 | 8.5 | 6.1 | 4.15 | 3.58 |
| 10 | 3.70 | 9.3 | 4.7 | 6.0 | 8.6 | 8.1 | 8.6 | 8.4 | 5.6 | 4.08 | 3.55 |
| 11 | 3.70 | 7.2 | 4.75 | 5.9 | 8.6 | 8.2 | 8.9 | 8.3 | 5.4 | 4.00 | ..... |
| 12 | 3.70 | 7.5 | 5.2 | 5.95 | 8.6 | 8.0 | 9.0 | 7.6 | 5.2 | 3.92 | ..... |
| 13 | 3.70 | 7.0 | 5.4 | 7.1 | 8.4 | 7.5 | 9.3 | 7.5 | 5.15 | 3.88 | ..... |
| 14 | 3.70 | 8.5 | 6.25 | 9.5 | 8.3 | 7.0 | 9.0 | 7.1 | 5.1 | 3.82 | ..... |
| 15 | 3.68 | 8.4 | 10.9 | 9.3 | 8.2 | 6.8 | 8.5 | 7.0 | 5.0 | 3.80 | ..... |
| 16 | 3.68 | 7.5 | 10.9 | 8.8 | 8.5 | 6.8 | 8.0 | 7.2 | 4.9 | 3.78 | ..... |
| 17 | 3.68 | 7.6 | 10.6 | 8.0 | 9.0 | 6.6 | 7.8 | 7.3 | 4.8 | 3.78 | ..... |
| 18 | 3.68 | 6.5 | 10.0 | 11.2 | 9.0 | 7.4 | 7.8 | 7.4 | 4.85 | 3.80 | ..... |
| 19 | 3.68 | 6.15 | 9.4 | 10.9 | 8.5 | 7.4 | 8.0 | 7.5 | 4.9 | 3.78 | ..... |
| 20 | 3.68 | 6.8 | 8.5 | 9.6 | 8.2 | 7.1 | 8.0 | 7.3 | 5.0 | 3.75 | ..... |
| 21 | 3.70 | 6.4 | 7.9 | 8.8 | 7.8 | 7.0 | 8.0 | 7.2 | 4.8 | 3.72 | ..... |
| 22 | 3.75 | 6.0 | 7.8 | 8.4 | 7.4 | 7.0 | 8.0 | 7.4 | 4.7 | 3.70 | ..... |
| 23 | 4.00 | 5.95 | 7.0 | 7.9 | 7.2 | 6.9 | 8.0 | 7.6 | 5.0 | 3.85 | ..... |
| 24 | 4.00 | 5.75 | 6.8 | 7.5 | 7.0 | 6.8 | 7.9 | 7.9 | 4.85 | 4.00 | ..... |
| 25 | 4.00 | 5.6 | 6.5 | 7.4 | 6.9 | 6.6 | 8.0 | 8.0 | 4.8 | 3.95 | ..... |
| 26 | 4.10 | 5.5 | 6.3 | 7.9 | 6.6 | 6.5 | 8.6 | 7.6 | 4.6 | 3.85 | ..... |
| 27 | 4.20 | 5.45 | 6.05 | 7.4 | 6.6 | 6.4 | 8.6 | 7.8 | 4.30 | 3.75 | ..... |
| 28 | 4.12 | 5.4 | 6.0 | 7.4 | 6.45 | 6.7 | 8.1 | 7.6 | 4.8 | 3.75 | ..... |
| 29 | 4.38 | 5.35 | 6.0 | 7.5 | ..... | 7.5 | 7.6 | 6.9 | 4 42 | 3.72 | ..... |
| 30 | 4.35 | 5.2 | 7.8 | 7.6 | ..... | 8.3 | 7.3 | 6.6 | 4.25 | 3.80 | ..... |
| 31 | 4.25 | ..... | 7.8 | 7.7 | ..... | 8.9 | ..... | 6.5 | ..... | 3.80 | ..... |

*Daily discharge, in second-feet, of South Fork of Trinity River near China Flat, Cal., for the years ending Sept. 30, 1912–13.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | ..... | 82 | 108 | 215 | 1,980 | 1,500 | 1,980 | 6,410 | 2,460 | 628 | 234 | 120 |
| 2 | ..... | 82 | 108 | 198 | 1,780 | 1,400 | 1,880 | 5,810 | 1,930 | 600 | 225 | 135 |
| 3 | ..... | 82 | 108 | 180 | 1,680 | 1,320 | 1,680 | 4,370 | 1,730 | 572 | 216 | 150 |
| 4 | ..... | 82 | 108 | 162 | 1,590 | 1,230 | 1,680 | 4,110 | 2,030 | 545 | 216 | 210 |
| 5 | ..... | 82 | 108 | 145 | 1,400 | 1,450 | 1,590 | 3,860 | 1,730 | 545 | 216 | 260 |
| 6 | ..... | 82 | 145 | 145 | 1,400 | 2,640 | 1,500 | 3,500 | 1,540 | 520 | 216 | 802 |
| 7 | ..... | 82 | 173 | 215 | 1,590 | 2,750 | 1,400 | 3,020 | 1,540 | 495 | 216 | 1,440 |
| 8 | ..... | 82 | 173 | 485 | 2,200 | 2,640 | 1,590 | 2,900 | 1,630 | 495 | 210 | 655 |
| 9 | ..... | 95 | 145 | 900 | 1,880 | 2,310 | 1,400 | 2,900 | 1,360 | 445 | 204 | 422 |
| 10 | ..... | 145 | 132 | 832 | 1,780 | 2,310 | 1,500 | 2,570 | 1,110 | 422 | 195 | 352 |
| 11 | ..... | 180 | 125 | 770 | 1,680 | 2,310 | 1,590 | 2,460 | 1,180 | 422 | 195 | 368 |
| 12 | 108 | 145 | 120 | 800 | 1,500 | 2,310 | 1,500 | 2,350 | 770 | 392 | 195 | 260 |
| 13 | 108 | 145 | 120 | 1,680 | 1,680 | 2,310 | 1,500 | 2,350 | 1,270 | 380 | 186 | 240 |
| 14 | 108 | 145 | 120 | 1,590 | 1,780 | 2,090 | 1,400 | 2,350 | 1,180 | 368 | 180 | 225 |
| 15 | 108 | 187 | 115 | 1,230 | 1,680 | 2,200 | 1,500 | 1,830 | 1,040 | 352 | 174 | 210 |
| 16 | 108 | 317 | 145 | 1,080 | 2,090 | 2,870 | 1,500 | 2,030 | 965 | 340 | 165 | 210 |
| 17 | 108 | 250 | 198 | 1,080 | 3,860 | 2,750 | 1,320 | 1,930 | 900 | 340 | 156 | 195 |
| 18 | 108 | 215 | 173 | 832 | 4,250 | 2,870 | 1,230 | 1,830 | 900 | 328 | 156 | 186 |
| 19 | 95 | 145 | 152 | 970 | 4,640 | 2,750 | 1,230 | 1,730 | 835 | 320 | 156 | 180 |
| 20 | 95 | 145 | 145 | 900 | 2,870 | 2,750 | 1,230 | 1,930 | 770 | 320 | 150 | 180 |
| 21 | 90 | 145 | 145 | 832 | 2,420 | 2,640 | 1,230 | 1,930 | 835 | 328 | 150 | 174 |
| 22 | 90 | 132 | 145 | 740 | 2,530 | 2,310 | 1,230 | 1,830 | 835 | 312 | 144 | 174 |
| 23 | 82 | 125 | 145 | 680 | 2,310 | 2,200 | 1,150 | 1,730 | 900 | 312 | 135 | 174 |
| 24 | 82 | 120 | 152 | 832 | 2,090 | 2,200 | 1,150 | 1,930 | 900 | 288 | 135 | 165 |
| 25 | 82 | 120 | 145 | 9,540 | 1,880 | 2,310 | 1,230 | 2,790 | 868 | 288 | 126 | 156 |
| 26 | 82 | 108 | 140 | 9,840 | 1,880 | 2,420 | 1,230 | 2,460 | 835 | 288 | 126 | 150 |
| 27 | 82 | 108 | 215 | 4,640 | 1,780 | 2,310 | 1,230 | 2,570 | 835 | 288 | 126 | 150 |
| 28 | 82 | 108 | 232 | 3,860 | 1,590 | 2,420 | 1,230 | 2,570 | 802 | 280 | 120 | 150 |
| 29 | 82 | 108 | 215 | 3,230 | 1,590 | 2,310 | 2,530 | 2,240 | 710 | 288 | 126 | 156 |
| 30 | 82 | 108 | 187 | 2,420 | ..... | 2,200 | 5,160 | 2,240 | 655 | 260 | 126 | 156 |
| 31 | 82 | ..... | 198 | 2,310 | ..... | 1,980 | ..... | 2,030 | ..... | 248 | 126 | ..... |

*Daily discharge, in second-feet, of South Fork of Trinity River near China Flat, Cal., for the years ending Sept. 30, 1912–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1912–13. | | | | | | | | | | | |
| 1 | 150 | 248 | 810 | 3,160 | 3,400 | 1,760 | 4,480 | 1,660 | 1,150 | 462 | 230 |
| 2 | 150 | 225 | 750 | 2,820 | 3,640 | 1,760 | 3,880 | 1,570 | 1,230 | 432 | 215 |
| 3 | 150 | 260 | 750 | 2,490 | 3,640 | 1,860 | 3,640 | 1,480 | 1,390 | 449 | 206 |
| 4 | 144 | 280 | 810 | 2,270 | 3,280 | 2,060 | 3,640 | 1,390 | 1,310 | 420 | 200 |
| 5 | 144 | 770 | 750 | 2,060 | 3,040 | 2,060 | 5,130 | 1,390 | 1,150 | 432 | 195 |
| 6 | 135 | 6,790 | 690 | 1,810 | 3,160 | 2,160 | 4,610 | 1,480 | 1,010 | 440 | 188 |
| 7 | 135 | 5,130 | 635 | 1,570 | 3,280 | 2,270 | 4,240 | 1,760 | 940 | 408 | 175 |
| 8 | 126 | 2,930 | 635 | 1,860 | 3,400 | 2,490 | 3,760 | 1,960 | 940 | 392 | 170 |
| 9 | 120 | 1,960 | 610 | 1,620 | 3,760 | 2,930 | 3,640 | 2,270 | 1,010 | 342 | 170 |
| 10 | 120 | 4,000 | 585 | 1,480 | 3,760 | 3,040 | 3,280 | 2,490 | 810 | 318 | 162 |
| 11 | 120 | 2,380 | 610 | 1,390 | 3,760 | 3,160 | 3,520 | 2,600 | 750 | 290 | ..... |
| 12 | 120 | 2,600 | 870 | 1,440 | 3,760 | 3,040 | 3,280 | 2,060 | 635 | 266 | ..... |
| 13 | 120 | 2,270 | 1,010 | 2,600 | 3,520 | 2,600 | 3,640 | 1,960 | 585 | 254 | ..... |
| 14 | 120 | 3,160 | 1,710 | 5,520 | 3,400 | 2,160 | 3,640 | 1,660 | 585 | 236 | ..... |
| 15 | 116 | 3,160 | 6,560 | 5,000 | 3,280 | 2,060 | 3,160 | 1,570 | 635 | 230 | ..... |
| 16 | 116 | 2,600 | 6,430 | 4,360 | 3,520 | 2,160 | 2,710 | 1,570 | 585 | 224 | ..... |
| 17 | 116 | 2,930 | 6,170 | 3,520 | 3,880 | 1,860 | 2,600 | 1,570 | 535 | 224 | ..... |
| 18 | 116 | 1,860 | 5,390 | 7,110 | 3,880 | 2,600 | 2,380 | 1,570 | 585 | 230 | ..... |
| 19 | 116 | 1,620 | 4,740 | 6,690 | 3,520 | 2,600 | 2,600 | 1,760 | 585 | 224 | ..... |
| 20 | 116 | 2,270 | 3,760 | 5,130 | 3,280 | 2,380 | 2,600 | 1,570 | 635 | 215 | ..... |
| 21 | 120 | 1,860 | 3,280 | 4,360 | 2,930 | 2,270 | 2,600 | 1,480 | 585 | 206 | ..... |
| 22 | 135 | 1,480 | 3,280 | 4,000 | 2,600 | 2,270 | 2,490 | 1,390 | 535 | 200 | ..... |
| 23 | 210 | 1,440 | 2,490 | 3,520 | 2,490 | 2,270 | 2,490 | 1,480 | 585 | 245 | ..... |
| 24 | 210 | 1,270 | 2,270 | 3,040 | 2,380 | 2,160 | 2,380 | 1,760 | 585 | 290 | ..... |
| 25 | 210 | 1,150 | 1,960 | 2,930 | 2,270 | 2,060 | 2,160 | 1,960 | 585 | 275 | ..... |
| 26 | 240 | 1,080 | 1,760 | 3,520 | 2,060 | 1,960 | 2,380 | 1,660 | 535 | 245 | ..... |
| 27 | 280 | 1,040 | 1,520 | 2,930 | 2,060 | 1,860 | 2,600 | 1,660 | 360 | 215 | ..... |
| 28 | 248 | 1,010 | 1,480 | 2,930 | 1,910 | 2,060 | 2,380 | 1,860 | 535 | 215 | ..... |
| 29 | 352 | 975 | 1,480 | 3,040 | ..... | 2,710 | 2,060 | 1,390 | 449 | 206 | ..... |
| 30 | 340 | 870 | 3,040 | 3,040 | ..... | 3,400 | 1,860 | 1,230 | 380 | 230 | ..... |
| 31 | 300 | ..... | 3,040 | 3,040 | ..... | 3,880 | ..... | 1,080 | ..... | 230 | ..... |

NOTE.—Discharge determined from rating curves applicable when backwater did not occur in the following periods: Oct. 12, 1911, to May 1, 1912, poorly defined; May 2 to Nov. 6, 1912, poorly defined; Nov. 7, 1912, to Sept. 13, 1913, fairly well defined below 4,500 second-feet; high-water estimates are based on extension of the rating curves and are only approximate.

Discharge has been estimated for effect from backwater by comparison of records at this station with those for Trinity River near China Flat for the following periods: Jan. 8, 9, Jan. 25 to Feb. 28, Mar. 6 to Apr. 24, Apr. 29 to June 22, and June 24, Nov. 6–18, Dec. 15–22, Dec. 30, 1912, to Jan. 2, 1913, Jan. 15–22, Jan. 30 to Feb. 25, Mar. 6–24, Mar. 28 to June 25, June 27 and 28, 1913. Estimates are based on meager data and involve several assumptions, and estimates should be used with caution.

*Monthly discharge of South Fork of Trinity River near China Flat, Cal., for the years ending Sept. 30, 1912–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). |
|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | |
| 1911–12. | | | | |
| October 12–31 | 108 | 82 | 93.2 | 3,700 |
| November | 317 | 82 | 132 | 7,860 |
| December | 232 | 108 | 150 | 9,220 |
| January | 9,840 | 145 | 1,710 | 105,000 |
| February | 4,640 | 1,400 | 2,120 | 122,000 |
| March | 2,870 | 1,230 | 2,260 | 139,000 |
| April | 5,160 | 1,150 | 1,590 | 94,600 |
| May | 6,410 | 1,730 | 2,730 | 168,000 |
| June | 2,460 | 655 | 1,170 | 69,600 |
| July | 628 | 248 | 387 | 23,800 |
| August | 234 | 120 | 171 | 10,500 |
| September | 1,440 | 120 | 280 | 16,700 |
| The period | | | | 770,000 |
| 1912–13. | | | | |
| October | 352 | 116 | 168 | 10,300 |
| November | 6,790 | 225 | 1,990 | 118,000 |
| December | 6,560 | 585 | 2,250 | 138,000 |
| January | 7,110 | 1,390 | 3,230 | 199,000 |
| February | 3,880 | 1,910 | 3,170 | 176,000 |
| March | 3,880 | 1,760 | 2,380 | 146,000 |
| April | 5,130 | 1,860 | 3,130 | 186,000 |
| May | 2,600 | 1,080 | 1,690 | 104,000 |
| June | 1,390 | 360 | 740 | 44,000 |
| July | 462 | 200 | 292 | 18,000 |
| August 1–10 | 230 | 162 | 191 | 3,790 |
| The period | | | | 1,140,000 |

NOTE.—Estimates fair for months in which backwater did not occur. See footnote to daily discharge table.

## SMITH RIVER BASIN.

### SOUTH FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

LOCATION.—In the SW. ¼ NE. ¼ sec. 10, T. 16 N., R. 1 E., just below the suspension highway bridge, one-eighth mile above junction with Smith River and about 9 miles northeast of Crescent City.

RECORDS AVAILABLE.—September 9, 1911, to September 30, 1913, when station was discontinued.

DRAINAGE AREA.—290 square miles.

GAGE.—Staff in five sections on left bank 200 feet below bridge.

CHANNEL.—Bowlders and gravel; shifting.

DISCHARGE MEASUREMENTS.—Made from cable 400 feet below gage or by wading.

ACCURACY.—On account of changes in channel results are only fair. During extreme high water there is probably back water from Smith River.

COOPERATION.—Station maintained in cooperation with Mountain Power Co., through H. E. Green, engineer.

*Discharge measurements of South Fork of Smith River near Crescent City, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 2 | 4.42 | 204 | Mar. 28 | 8.29 | 4,400 | May 25 | 6.29 | 1,510 |
| Nov. 13 | 9.24 | 5,460 | 29 | 10.17 | 6,280 | 30 | 5.85 | 1,170 |
| 14 | 11.22 | 8,960 | 29 | 10.22 | 6,420 | June 17 | 5.00 | 522 |
| Feb. 15 | 6.20 | 1,470 | Apr. 1 | 7.81 | 3,590 | Sept. 20 | 4.02 | 167 |
| 18 | 6.40 | 1,720 | 6 | 9.04 | 5,430 | 20 | 4.02 | 170 |

*Daily gage height, in feet, of South Fork of Smith River near Crescent City, Cal., for the year ending Sept. 30, 1913.*

[Neils Christensen, observer.]

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.5 | 5.6 | 5.8 | 9.0 | 7.0 | 5.4 | 7.8 | 6.2 | 5.8 | 5.05 | 4.5 | 4.1 |
| 2 | 4.42 | 5.55 | 5.8 | 8.2 | 6.9 | 5.35 | 7.4 | 6.3 | 5.85 | 5.0 | 4.45 | 4.1 |
| 3 | 4.40 | 5.65 | 5.8 | 7.8 | 6.8 | 5.9 | 7.3 | 6.3 | 5.8 | 6.2 | 4.45 | 4.65 |
| 4 | 4.38 | 6.2 | 6.2 | 7.5 | 6.6 | 5.9 | 8.2 | 6.6 | 5.75 | 6.2 | 4.4 | 5.05 |
| 5 | 4.38 | 10.6 | 6.0 | 7.1 | 6.4 | 5.85 | 10.6 | 6.6 | 5.6 | 5.7 | 4.4 | 4.9 |
| 6 | 4.38 | 18.0 | 5.9 | 6.9 | 6.4 | 5.8 | 8.9 | 6.8 | 5.5 | 5.45 | 4.4 | 4.55 |
| 7 | 4.35 | 10.6 | 5.8 | 6.8 | 6.3 | 5.9 | 8.1 | 6.8 | 5.5 | 5.25 | 4.4 | 4.35 |
| 8 | 4.30 | 8.8 | 5.7 | 9.8 | 6.3 | 6.0 | 7.8 | 6.8 | 5.4 | 5.15 | 4.35 | 4.3 |
| 9 | 4.30 | 12.6 | 5.6 | 8.2 | 6.3 | 6.1 | 7.6 | 6.6 | 5.3 | 5.05 | 4.35 | 4.25 |
| 10 | 4.30 | 11.5 | 5.6 | 7.6 | 6.3 | 6.0 | 7.4 | 8.6 | 5.25 | 5.0 | 4.3 | 4.2 |
| 11 | 4.29 | 9.7 | 5.6 | 7.3 | 6.2 | 5.95 | 7.4 | 8.2 | 5.2 | 4.9 | 4.3 | 4.2 |
| 12 | 4.29 | 10.5 | 5.8 | 8.9 | 6.2 | 5.8 | 7.8 | 7.6 | 5.15 | 4.9 | 4.3 | 4.15 |
| 13 | 4.28 | 9.3 | 6.3 | 13.2 | 6.2 | 5.75 | 7.7 | 7.0 | 5.15 | 4.9 | 4.3 | 4.15 |
| 14 | 4.26 | 11.0 | 8.1 | 10.6 | 6.2 | 5.6 | 7.4 | 6.5 | 5.15 | 4.85 | 4.3 | 4.1 |
| 15 | 4.24 | 9.4 | 10.2 | 9.5 | 6.2 | 5.5 | 7.1 | 6.8 | 5.1 | 4.8 | 4.3 | 4.1 |
| 16 | 4.24 | 8.4 | 12.3 | 8.9 | 6.3 | 5.5 | 6.9 | 6.7 | 5.05 | 4.8 | 4.3 | 4.1 |
| 17 | 4.24 | 7.8 | 10.7 | 9.6 | 6.6 | 5.75 | 6.8 | 6.6 | 5.0 | 4.75 | 4.25 | 4.05 |
| 18 | 4.23 | 7.3 | 10.3 | 17.1 | 6.4 | 6.0 | 6.7 | 6.6 | 4.95 | 4.75 | 4.25 | 4.05 |
| 19 | 4.42 | 8.2 | 9.2 | 10.8 | 6.2 | 5.95 | 6.6 | 6.4 | 5.05 | 4.7 | 4.25 | 4.05 |
| 20 | 4.50 | 8.2 | 8.2 | 9.1 | 6.0 | 6.0 | 6.5 | 6.4 | 5.05 | 4.7 | 4.25 | 4.05 |
| 21 | 4.34 | 7.5 | 7.6 | 8.2 | 5.9 | 6.7 | 6.5 | 6.4 | 5.2 | 4.65 | 4.25 | 4.05 |
| 22 | 5.5 | 7.2 | 7.2 | 8.0 | 5.8 | 6.6 | 6.4 | 6.4 | 5.45 | 4.6 | 4.2 | 4.05 |
| 23 | 6.4 | 6.8 | 6.9 | 7.5 | 5.8 | 6.3 | 6.3 | 6.4 | 5.35 | 4.65 | 4.2 | 4.05 |
| 24 | 5.3 | 6.6 | 6.9 | 7.3 | 5.75 | 6.0 | 6.4 | 6.4 | 5.15 | 4.85 | 4.2 | 4.0 |
| 25 | 5.9 | 6.4 | 6.7 | 7.3 | 5.65 | 5.95 | 6.7 | 6.3 | 5.1 | 4.85 | 4.2 | 4.0 |
| 26 | 6.4 | 6.3 | 6.6 | 7.1 | 5.6 | 5.8 | 6.7 | 6.2 | 5.05 | 4.75 | 4.2 | 4.0 |
| 27 | 5.7 | 6.2 | 6.4 | 7.0 | 5.55 | 5.8 | 6.5 | 6.2 | 5.45 | 4.65 | 4.15 | 4.0 |
| 28 | 5.4 | 6.0 | 6.3 | 6.9 | 5.45 | 8.6 | 6.4 | 6.0 | 5.4 | 4.6 | 4.1 | 4.05 |
| 29 | 6.8 | 5.9 | 6.9 | 6.9 | ..... | 10.1 | 6.4 | 5.9 | 5.25 | 4.6 | 4.1 | 4.15 |
| 30 | 6.4 | 6.0 | 11.2 | 6.8 | ..... | 9.5 | 6.4 | 5.85 | 5.1 | 4.55 | 4.1 | 4.05 |
| 31 | 5.85 | ..... | 10.2 | 6.8 | ..... | 8.5 | ..... | 5.8 | ..... | 4.5 | 4.1 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 22 feet at 7.30 a. m.; Jan. 18, 1913, 19.4 feet at 7.30 a. m.

*Daily discharge, in second-feet, of South Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–13.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 156 | 21 | 156 |
| 2 | ..... | 12 | 165 | 22 | 150 |
| 3 | ..... | 13 | 180 | 23 | 150 |
| 4 | ..... | 14 | 180 | 24 | 165 |
| 5 | ..... | 15 | 180 | 25 | 162 |
| 6 | ..... | 16 | 150 | 26 | 156 |
| 7 | ..... | 17 | 125 | 27 | 150 |
| 8 | ..... | 18 | 150 | 28 | 156 |
| 9 | 150 | 19 | 153 | 29 | 162 |
| 10 | 153 | 20 | 156 | 30 | 174 |

*Daily gage height, in second-feet, of South Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–13*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 165 | 180 | 370 | 2,080 | 2,360 | 1,520 | 1,350 | 15,500 | 1,500 | 670 | 325 | 265 |
| 2 | 174 | 186 | 343 | 1,690 | 1,950 | 1,340 | 1,280 | 7,670 | 1,350 | 645 | 305 | 345 |
| 3 | 165 | 204 | 370 | 1,690 | 2,080 | 1,180 | 1,210 | 4,860 | 1,350 | 620 | 305 | 475 |
| 4 | 180 | 195 | 366 | 1,950 | 3,090 | 1,050 | 1,210 | 3,610 | 1,350 | 595 | 305 | 385 |
| 5 | 180 | 192 | 415 | 1,690 | 3,720 | 990 | 1,210 | 3,030 | 1,210 | 570 | 285 | 520 |
| 6 | 210 | 192 | 1,450 | 2,220 | 3,400 | 1,260 | 1,280 | 3,030 | 1,210 | 520 | 285 | 1,180 |
| 7 | 214 | 183 | 1,240 | 2,500 | 2,790 | 1,700 | 1,280 | 2,760 | 1,210 | 520 | 285 | 865 |
| 8 | 195 | 177 | 752 | 3,720 | 4,910 | 1,900 | 1,210 | 2,890 | 1,210 | 520 | 285 | 595 |
| 9 | 186 | 174 | 680 | 13,300 | 4,910 | 2,210 | 1,210 | 2,760 | 1,080 | 498 | 285 | 475 |
| 10 | 177 | 162 | 580 | 12,400 | 4,220 | 1,600 | 1,210 | 2,500 | 925 | 475 | 265 | 385 |
| 11 | 180 | 153 | 492 | 12,900 | 4,220 | 1,420 | 1,210 | 2,260 | 925 | 475 | 265 | 345 |
| 12 | 183 | 150 | 465 | 32,400 | 4,560 | 1,180 | 1,140 | 2,040 | 1,080 | 475 | 265 | 305 |
| 13 | 206 | 125 | 440 | 33,300 | 3,720 | 3,100 | 1,140 | 2,040 | 1,350 | 475 | 248 | 305 |
| 14 | 242 | 135 | 465 | 24,500 | 4,220 | 4,330 | 1,080 | 1,840 | 1,350 | 475 | 230 | 285 |
| 15 | 269 | 150 | 520 | 12,400 | 6,570 | 5,350 | 1,080 | 1,840 | 1,210 | 430 | 265 | 265 |
| 16 | 261 | 156 | 752 | 4,730 | 17,600 | 7,720 | 1,080 | 1,500 | 1,080 | 430 | 265 | 265 |
| 17 | 580 | 224 | 955 | 4,050 | 50,700 | 5,530 | 1,020 | 1,350 | 1,080 | 430 | 265 | 265 |
| 18 | 520 | 912 | 912 | 3,400 | 30,200 | 3,910 | 1,020 | 1,350 | 955 | 408 | 248 | 248 |
| 19 | 492 | 1,450 | 1,000 | 2,790 | 12,900 | 2,760 | 955 | 1,350 | 895 | 408 | 230 | 230 |
| 20 | 465 | 1,400 | 1,040 | 2,360 | 6,600 | 2,040 | 955 | 1,840 | 925 | 385 | 230 | 230 |
| 21 | 253 | 1,450 | 1,040 | 2,500 | 4,010 | 1,940 | 1,020 | 1,660 | 925 | 385 | 230 | 223 |
| 22 | 249 | 1,450 | 1,040 | 2,360 | 3,240 | 1,840 | 1,080 | 1,500 | 895 | 385 | 230 | 220 |
| 23 | 253 | 1,340 | 1,240 | 2,500 | 2,960 | 1,750 | 1,080 | 1,350 | 895 | 385 | 212 | 216 |
| 24 | 245 | 1,240 | 1,290 | 5,090 | 2,560 | 1,660 | 1,420 | 1,500 | 835 | 385 | 206 | 209 |
| 25 | 228 | 4,730 | 1,450 | 19,200 | 2,210 | 1,660 | 1,660 | 1,580 | 865 | 385 | 198 | 202 |
| 26 | 217 | 1,240 | 1,690 | 25,100 | 1,900 | 1,580 | 1,660 | 2,040 | 780 | 365 | 198 | 195 |
| 27 | 210 | 1,000 | 1,820 | 13,300 | 1,800 | 1,500 | 1,500 | 2,500 | 780 | 345 | 198 | 195 |
| 28 | 206 | 870 | 2,220 | 4,390 | 1,700 | 1,500 | 1,660 | 1,940 | 780 | 345 | 198 | 195 |
| 29 | 195 | 790 | 1,340 | 3,560 | 1,520 | 1,500 | 6,220 | 1,940 | 725 | 345 | 195 | 202 |
| 30 | 183 | 715 | 2,300 | 3,400 | ..... | 1,420 | 11,200 | 1,750 | 698 | 325 | 216 | 198 |
| 31 | 180 | ..... | 2,220 | 2,790 | ..... | 1,350 | ..... | 1,500 | ..... | 325 | 230 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 230 | 725 | 950 | 5,080 | 2,470 | 760 | 3,610 | 1,480 | 1,080 | 548 | 300 | 185 |
| 2 | 202 | 698 | 950 | 3,820 | 2,340 | 728 | 3,030 | 1,590 | 1,120 | 520 | 282 | 185 |
| 3 | 195 | 752 | 950 | 3,230 | 2,210 | 1,170 | 2,890 | 1,590 | 1,080 | 1,480 | 282 | 355 |
| 4 | 189 | 1,080 | 1,280 | 2,810 | 1,950 | 1,170 | 4,210 | 1,950 | 1,030 | 1,480 | 265 | 548 |
| 5 | 189 | 6,940 | 1,100 | 2,290 | 1,710 | 1,120 | 8,230 | 1,950 | 905 | 985 | 265 | 470 |
| 6 | 189 | 23,900 | 1,020 | 2,050 | 1,710 | 1,080 | 5,310 | 2,210 | 830 | 795 | 265 | 318 |
| 7 | 180 | 7,890 | 950 | 1,930 | 1,590 | 1,170 | 4,060 | 2,210 | 830 | 665 | 265 | 250 |
| 8 | 165 | 4,760 | 880 | 6,450 | 1,590 | 1,270 | 3,610 | 2,210 | 760 | 605 | 250 | 235 |
| 9 | 165 | 11,800 | 815 | 3,820 | 1,590 | 1,370 | 3,310 | 1,950 | 695 | 548 | 250 | 222 |
| 10 | 165 | 9,590 | 815 | 2,950 | 1,590 | 1,270 | 3,030 | 4,830 | 665 | 520 | 235 | 210 |
| 11 | 162 | 6,270 | 815 | 2,550 | 1,480 | 1,220 | 3,030 | 4,210 | 635 | 470 | 235 | 210 |
| 12 | 162 | 7,710 | 950 | 4,920 | 1,480 | 1,080 | 3,310 | 3,310 | 605 | 470 | 235 | 198 |
| 13 | 159 | 5,590 | 1,380 | 13,000 | 1,480 | 1,030 | 3,460 | 2,470 | 605 | 470 | 235 | 198 |
| 14 | 153 | 8,640 | 3,670 | 7,890 | 1,480 | 905 | 3,030 | 1,830 | 605 | 445 | 235 | 185 |
| 15 | 147 | 5,760 | 7,170 | 5,930 | 1,480 | 830 | 2,610 | 2,210 | 575 | 420 | 235 | 185 |
| 16 | 147 | 4,120 | 11,200 | 4,920 | 1,590 | 830 | 2,340 | 2,080 | 548 | 420 | 235 | 185 |
| 17 | 147 | 3,230 | 8,070 | 6,100 | 1,950 | 1,030 | 2,210 | 1,950 | 520 | 398 | 222 | 175 |
| 18 | 144 | 2,550 | 7,350 | 22,000 | 1,710 | 1,270 | 2,080 | 1,950 | 495 | 398 | 222 | 175 |
| 19 | 202 | 3,820 | 5,420 | 8,590 | 1,480 | 1,220 | 1,950 | 1,710 | 548 | 375 | 222 | 175 |
| 20 | 230 | 3,820 | 3,820 | 5,630 | 1,270 | 1,270 | 1,830 | 1,710 | 548 | 375 | 222 | 175 |
| 21 | 177 | 2,810 | 2,950 | 4,210 | 1,170 | 2,080 | 1,830 | 1,710 | 635 | 355 | 222 | 175 |
| 22 | 670 | 2,420 | 2,420 | 3,910 | 1,080 | 1,950 | 1,710 | 1,710 | 795 | 335 | 210 | 175 |
| 23 | 1,210 | 1,930 | 2,050 | 3,170 | 1,080 | 1,590 | 1,590 | 1,710 | 728 | 355 | 210 | 175 |
| 24 | 570 | 1,700 | 2,050 | 2,890 | 1,030 | 1,270 | 1,710 | 1,710 | 605 | 445 | 210 | 165 |
| 25 | 895 | 1,480 | 1,810 | 2,890 | 945 | 1,220 | 2,080 | 1,590 | 575 | 445 | 210 | 165 |
| 26 | 1,210 | 1,380 | 1,700 | 2,610 | 905 | 1,080 | 2,080 | 1,480 | 548 | 398 | 210 | 165 |
| 27 | 780 | 1,280 | 1,480 | 2,470 | 868 | 1,080 | 1,830 | 1,480 | 795 | 355 | 198 | 165 |
| 28 | 620 | 1,100 | 1,380 | 2,340 | 795 | 4,830 | 1,710 | 1,270 | 760 | 335 | 185 | 175 |
| 29 | 1,500 | 1,020 | 2,050 | 2,340 | ..... | 7,330 | 1,710 | 1,170 | 665 | 335 | 185 | 198 |
| 30 | 1,210 | 1,100 | 9,020 | 2,210 | ..... | 6,300 | 1,710 | 1,120 | 575 | 318 | 185 | 175 |
| 31 | 865 | ..... | 7,170 | 2,210 | ..... | 4,670 | ..... | 1,080 | ..... | 300 | 185 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 9, 1911, to Feb. 17, 1912, poorly defined; Feb. 18 to Mar. 16, 1912, poorly defined; Mar. 17 to Nov. 6, 1912, well defined below 3,500 second-feet; Nov. 7, 1912, to Jan. 18, 1913, poorly defined; Jan. 19 to Sept. 30, 1913, well defined. High-water estimates based on extension of rating curves and are only approximate.

*Monthly discharge of South Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–13.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 9–30 | 180 | 125 | 158 | 6,890 | C. |
| 1911–12. | | | | | |
| October | 580 | 165 | 247 | 15,200 | C. |
| November | 4,730 | 125 | 718 | 42,700 | C. |
| December | 2,500 | 343 | 1,010 | 62,100 | C. |
| January | 33,300 | 1,690 | 8,400 | 516,000 | D. |
| February | 50,700 | 1,520 | 6,950 | 400,000 | D. |
| March | 7,720 | 990 | 2,250 | 138,000 | C. |
| April | 11,200 | 955 | 1,720 | 102,000 | B. |
| May | 15,500 | 1,350 | 2,750 | 169,000 | B. |
| June | 1,500 | 698 | 1,050 | 62,500 | B. |
| July | 670 | 325 | 452 | 27,800 | B. |
| August | 325 | 195 | 250 | 15,400 | B. |
| September | 1,180 | 195 | 343 | 20,400 | B. |
| The year | 50,700 | 125 | 2,170 | 1,570,000 | |
| 1912–13. | | | | | |
| October | 1,500 | 144 | 427 | 26,300 | B. |
| November | 23,900 | 698 | 4,530 | 270,000 | D. |
| December | 11,200 | 815 | 3,020 | 186,000 | D. |
| January | 22,000 | 1,930 | 4,750 | 292,000 | D. |
| February | 2,470 | 795 | 1,500 | 83,300 | B. |
| March | 7,330 | 728 | 1,780 | 109,000 | B. |
| April | 8,230 | 1,590 | 2,840 | 169,000 | B. |
| May | 4,830 | 1,080 | 1,980 | 122,000 | B. |
| June | 1,120 | 495 | 712 | 42,400 | B. |
| July | 1,480 | 300 | 528 | 32,500 | B. |
| August | 300 | 185 | 231 | 14,200 | B. |
| September | 548 | 165 | 219 | 13,000 | B. |
| The year | 23,900 | 144 | 1,880 | 1,360,000 | |

## NORTH FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

LOCATION.—In the SW. ¼ NE. ¼ sec. 20, T. 17 N., R. 2 E., half a mile northeast of Gasquet, half a mile above junction of North and Middle forks, and about 15 miles northeast of Crescent City.

RECORDS AVAILABLE.—September 8, 1911, to September 30, 1913.

DRAINAGE AREA.—81 square miles.

GAGE.—Staff in four sections on left bank, installed December 3, 1911. Original gage, destroyed by high water on November 15, 1911, was located one-eighth mile below present gage. Original datum not maintained.

CHANNEL.—Bowlders and gravel; rough; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

ACCURACY.—An average rating curve has been developed and results are good for low and medium stages. High-water estimates are approximate.

COOPERATION.—Station maintained in cooperation with United States Forest Service and Mountain Power Co., through H. E. Green, engineer.

*Discharge measurements of North Fork of Smith River near Crescent City, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height. | Discharge. | Date. | Gage height. | Discharge. | Date | Gage height. | Discharge. |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* | | *Feet.* | *Sec.-ft.* |
| Oct. 1 | 9.40 | 135 | Feb. 17 | 11.30 | 702 | May 26 | 10.40 | 388 |
| Nov. 15 | 14.90 | 3,740 | Mar. 30 | 15.75 | 4,580 | 29 | 10.21 | 328 |
| 16 | 13.69 | 2,380 | 31 | 14.62 | 3,350 | June 18 | 9.57 | 199 |
| 17 | 12.95 | 1,680 | Apr. 7 | 13.59 | 2,130 | Sept. 21 | 9.09 | 102 |
| Feb. 16 | 11.07 | 636 | 8 | 13.46 | 2,180 | 21 | 9.09 | 115 |

*Daily gage height, in feet, of North Fork of Smith River near Crescent City, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.4 | ..... | 11.0 | ..... | 12.3 | 10.3 | 13.8 | 11.2 | ..... | 10.3 | ..... | 8.95 |
| 2 | 9.2 | 11.0 | 11.2 | ..... | ..... | ..... | 13.1 | 11.9 | 10.0 | 10.2 | ..... | ..... |
| 3 | 9.15 | ..... | 11.4 | 13.0 | ..... | 11.9 | 13.3 | 11.6 | 10.0 | 10.6 | 9.4 | 9.95 |
| 4 | 9.1 | 12.7 | 12.1 | ..... | ..... | 11.6 | 14.0 | ..... | 9.9 | ..... | 9.4 | 11.0 |
| 5 | 9.1 | 11.8 | 11.7 | ..... | ..... | 11.3 | 16.7 | ..... | 9.9 | ..... | 9.4 | ..... |
| 6 | 9.1 | 19.7 | 11.4 | ..... | ..... | 11.1 | ..... | ..... | 9.85 | ..... | 9.4 | ..... |
| 7 | 9.1 | 15.3 | 11.2 | 11.7 | ..... | 11.0 | 13.8 | 10.9 | 9.8 | ..... | 9.3 | ..... |
| 8 | 9.1 | ..... | 11.0 | 15.4 | ..... | 10.9 | 13.4 | 10.8 | ..... | 9.7 | 9.3 | ..... |
| 9 | 9.1 | ..... | 11.0 | 13.6 | ..... | ..... | 13.2 | 10.7 | 9.8 | ..... | 9.25 | ..... |
| 10 | 9.1 | ..... | 11.4 | 12.8 | ..... | ..... | 12.8 | 12.5 | 9.8 | ..... | ..... | ..... |
| 11 | 9.1 | ..... | ..... | 12.5 | 11.2 | ..... | 12.4 | ..... | 9.7 | ..... | 9.25 | ..... |
| 12 | 9.05 | ..... | ..... | ..... | ..... | ..... | 12.4 | 12.6 | 9.7 | ..... | ..... | ..... |
| 13 | 9.05 | ..... | ..... | 18.4 | 11.0 | 10.5 | ..... | 12.0 | ..... | ..... | ..... | ..... |
| 14 | 9.0 | ..... | ..... | 15.8 | 11.0 | 10.4 | 12.8 | 11.7 | ..... | ..... | ..... | ..... |
| 15 | 9.0 | 14.9 | ..... | 14.7 | 11.0 | 10.4 | 12.5 | 11.5 | ..... | ..... | ..... | 9.3 |
| 16 | ..... | 13.7 | ..... | 14.0 | 11.1 | ..... | 12.2 | 11.3 | 9.6 | ..... | ..... | ..... |
| 17 | ..... | 13.0 | ..... | 15.2 | 11.3 | 10.3 | 12.0 | 11.2 | 9.6 | ..... | ..... | 9.15 |
| 18 | ..... | 12.5 | ..... | 20.6 | ..... | ..... | 11.8 | ..... | 9.6 | ..... | ..... | 9.1 |
| 19 | ..... | 14.2 | ..... | ..... | ..... | ..... | 11.6 | 11.0 | 9.7 | ..... | ..... | 9.1 |
| 20 | ..... | ..... | ..... | 14.2 | ..... | ..... | ..... | 10.9 | 9.6 | ..... | ..... | 9.1 |
| 21 | 9.2 | ..... | ..... | ..... | ..... | 12.4 | 11.3 | ..... | 9.55 | ..... | ..... | 9.0 |
| 22 | 11.0 | ..... | ..... | 13.3 | ..... | 12.9 | 11.2 | ..... | ..... | ..... | 9.1 | 9.1 |
| 23 | 12.0 | ..... | ..... | ..... | ..... | ..... | 11.1 | ..... | 11.2 | ..... | ..... | ..... |
| 24 | ..... | ..... | ..... | ..... | ..... | 11.8 | 11.0 | 10.5 | 10.7 | ..... | ..... | ..... |
| 25 | ..... | ..... | ..... | ..... | ..... | 11.6 | 10.9 | ..... | 10.5 | ..... | ..... | ..... |
| 26 | 12.3 | ..... | ..... | ..... | ..... | 11.4 | 10.8 | 10.4 | 10.4 | ..... | ..... | ..... |
| 27 | 11.4 | ..... | ..... | ..... | 10.35 | 11.3 | ..... | ..... | 10.9 | ..... | ..... | ..... |
| 28 | 11.0 | ..... | ..... | ..... | 10.3 | 15.0 | 10.7 | ..... | ..... | ..... | ..... | ..... |
| 29 | ..... | 11.0 | ..... | 12.1 | ..... | 17.9 | 10.9 | 10.2 | ..... | ..... | ..... | ..... |
| 30 | ..... | 11.1 | ..... | 12.0 | ..... | 15.8 | 11.0 | ..... | 10.45 | ..... | ..... | ..... |
| 31 | ..... | ..... | ..... | 12.0 | ..... | 14.8 | ..... | ..... | ..... | ..... | 9.0 | ..... |

NOTE.—Maximum recorded gage heights: Nov. 6, 1912, 21.3 feet at 8 a. m.; Jan. 18, 1913, 22.4 feet at 7 a. m.

*Daily discharge, in second-feet, of North Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 75 | 21 | 70 |
| 2 | ..... | 12 | 80 | 22 | 70 |
| 3 | ..... | 13 | 86 | 23 | 69 |
| 4 | ..... | 14 | 75 | 24 | 69 |
| 5 | ..... | 15 | 75 | 25 | 68 |
| 6 | ..... | 16 | 77 | 26 | 75 |
| 7 | ..... | 17 | 72 | 27 | 79 |
| 8 | 73 | 18 | 72 | 28 | 70 |
| 9 | 73 | 19 | 71 | 29 | 68 |
| 10 | 73 | 20 | 71 | 30 | 68 |

*Daily discharge, in second-feet, of North Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 70 | 67 | ..... | 1,140 | 1,260 | 745 | 665 | 10,100 | 705 | 320 | 132 | 132 |
| 2 | 72 | ..... | ..... | 930 | 1,080 | 665 | 665 | 4,960 | 625 | 306 | 132 | 157 |
| 3 | 73 | ..... | 84 | 790 | 980 | 665 | 625 | 2,990 | 590 | 292 | 125 | 320 |
| 4 | 74 | 64 | 76 | 745 | 1,260 | 625 | 590 | 2,100 | 520 | 278 | 118 | 228 |
| 5 | 75 | ..... | 94 | 745 | 2,680 | 665 | 555 | 1,680 | 520 | 265 | 118 | 625 |
| 6 | 72 | ..... | 1,640 | 835 | 1,640 | 930 | 520 | 1,260 | 456 | 252 | 118 | 1,140 |
| 7 | 68 | ..... | 1,030 | 6,200 | 1,480 | 1,480 | 520 | 1,120 | 456 | 240 | 118 | 1,080 |
| 8 | 106 | ..... | 790 | 3,760 | 1,680 | 1,400 | 520 | 980 | 424 | 228 | 118 | 665 |
| 9 | 144 | ..... | 665 | 8,500 | 3,320 | 1,140 | 488 | 835 | 424 | 228 | 112 | 488 |
| 10 | 146 | 692 | 590 | 7,280 | 4,960 | 1,010 | 456 | 745 | 394 | 217 | 112 | 394 |
| 11 | 148 | 351 | 555 | 3,880 | 3,880 | 880 | 456 | 705 | 364 | 206 | 112 | 306 |
| 12 | 150 | ..... | 520 | 17,300 | 2,680 | 835 | 488 | 650 | 520 | 206 | 106 | 252 |
| 13 | 153 | ..... | 488 | 13,200 | 2,280 | 880 | 488 | 590 | 1,080 | 196 | 106 | 228 |
| 14 | 173 | ..... | ..... | 4,960 | 2,680 | 835 | 475 | 555 | 1,140 | 186 | 112 | 217 |
| 15 | 185 | ..... | ..... | 3,720 | 2,190 | 6,050 | 475 | 520 | 835 | 186 | 118 | 196 |
| 16 | 175 | ..... | ..... | 2,480 | 13,200 | 3,880 | 475 | 488 | 665 | 186 | 118 | 186 |
| 17 | 300 | ..... | ..... | 1,820 | 19,700 | 2,880 | 460 | 472 | 590 | 166 | 106 | 176 |
| 18 | 250 | ..... | ..... | 1,400 | 8,680 | 2,480 | 460 | 456 | 520 | 176 | 106 | 166 |
| 19 | 200 | ..... | ..... | 1,330 | 4,600 | 2,000 | 450 | 488 | 488 | 166 | 94 | 148 |
| 20 | 150 | ..... | ..... | 1,260 | 2,990 | 1,560 | 450 | 520 | 930 | 166 | 94 | 148 |
| 21 | 100 | ..... | ..... | 1,030 | 2,190 | 1,330 | 460 | 705 | 520 | 166 | 94 | 118 |
| 22 | 75 | ..... | 745 | 930 | 1,640 | 1,200 | 475 | 625 | 520 | 166 | 94 | 140 |
| 23 | 68 | ..... | 1,200 | 930 | 1,560 | 1,140 | 475 | 590 | 520 | 157 | 94 | 132 |
| 24 | 68 | ..... | 1,030 | 1,140 | 1,330 | 1,060 | 750 | 555 | 488 | 157 | 94 | 132 |
| 25 | 68 | ..... | ..... | 10,900 | 1,140 | 980 | 1,000 | 555 | 456 | 157 | 94 | 125 |
| 26 | 68 | ..... | ..... | 10,300 | 1,030 | 930 | 1,200 | 1,020 | 424 | 148 | 94 | 118 |
| 27 | 67 | ..... | 1,400 | 5,630 | 930 | 880 | 1,030 | 1,480 | 409 | 148 | 100 | 118 |
| 28 | 67 | ..... | ..... | 4,260 | 835 | 835 | 3,000 | 980 | 379 | 140 | 94 | 125 |
| 29 | 67 | ..... | ..... | 2,880 | 790 | 835 | 4,960 | 980 | 349 | 132 | 94 | 125 |
| 30 | 67 | ..... | ..... | 2,100 | ..... | 745 | 6,050 | 930 | 334 | 132 | 94 | 125 |
| 31 | 67 | ..... | ..... | 1,640 | ..... | 705 | ..... | 930 | ..... | 132 | 100 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 148 | ..... | 590 | ..... | 1,200 | 364 | 2,480 | 665 | 292 | 364 | 148 | 89 |
| 2 | 118 | 590 | 665 | ..... | ..... | 670 | 1,820 | 980 | 278 | 334 | 148 | 89 |
| 3 | 112 | ..... | 745 | 1,730 | ..... | 980 | 2,000 | 835 | 278 | 456 | 148 | 265 |
| 4 | 106 | 1,480 | 1,080 | ..... | ..... | 835 | 2,680 | 765 | 252 | 405 | 148 | 590 |
| 5 | 106 | 930 | 880 | ..... | ..... | 705 | 5,910 | 695 | 252 | 355 | 148 | 540 |
| 6 | 106 | 11,100 | 745 | ..... | ..... | 625 | 4,200 | 625 | 240 | 305 | 148 | 485 |
| 7 | 106 | 4,120 | 665 | 880 | ..... | 590 | 2,480 | 555 | 228 | 255 | 132 | 432 |
| 8 | 106 | ..... | 590 | 4,240 | ..... | 555 | 2,100 | 520 | 228 | 206 | 132 | 380 |
| 9 | 106 | ..... | 590 | 2,280 | ..... | 525 | 1,910 | 488 | 228 | 203 | 125 | 328 |
| 10 | 106 | ..... | 745 | 1,560 | ..... | 500 | 1,560 | 1,330 | 228 | 201 | 125 | 276 |
| 11 | 106 | ..... | ..... | 1,330 | 665 | 475 | 1,260 | 1,360 | 206 | 198 | 125 | 224 |
| 12 | 100 | ..... | ..... | ..... | ..... | 450 | 1,260 | 1,400 | 206 | 196 | 123 | 172 |
| 13 | 100 | ..... | ..... | 8,680 | 590 | 424 | 1,410 | 1,030 | 201 | 193 | 121 | 120 |
| 14 | 94 | ..... | ..... | 4,720 | 590 | 394 | 1,560 | 880 | 196 | 191 | 120 | 125 |
| 15 | 94 | 3,650 | ..... | 3,430 | 590 | 394 | 1,330 | 790 | 191 | 188 | 118 | 132 |
| 16 | 94 | 2,380 | ..... | 2,680 | 625 | 380 | 1,140 | 705 | 186 | 186 | 116 | 112 |
| 17 | 94 | 1,730 | ..... | 4,000 | 705 | 364 | 1,030 | 665 | 186 | 184 | 114 | 112 |
| 18 | 90 | 1,330 | ..... | 12,800 | ..... | 590 | 930 | 630 | 186 | 181 | 113 | 106 |
| 19 | 160 | 2,880 | ..... | ..... | ..... | 810 | 835 | 590 | 206 | 179 | 112 | 106 |
| 20 | 190 | ..... | ..... | 2,880 | ..... | 1,040 | 770 | 555 | 186 | 177 | 110 | 106 |
| 21 | 118 | ..... | ..... | ..... | ..... | 1,260 | 705 | 522 | 176 | 174 | 108 | 94 |
| 22 | 590 | ..... | ..... | 2,000 | ..... | 1,640 | 665 | 490 | 420 | 172 | 106 | 106 |
| 23 | 1,030 | ..... | ..... | ..... | ..... | 1,280 | 625 | 457 | 665 | 169 | 104 | 105 |
| 24 | 500 | ..... | ..... | ..... | ..... | 930 | 590 | 424 | 488 | 167 | 103 | 105 |
| 25 | 750 | ..... | ..... | ..... | ..... | 835 | 555 | 410 | 424 | 164 | 102 | 100 |
| 26 | 1,200 | ..... | ..... | ..... | ..... | 745 | 520 | 394 | 394 | 162 | 100 | 100 |
| 27 | 745 | ..... | ..... | ..... | 379 | 705 | 505 | 374 | 555 | 159 | 99 | 100 |
| 28 | 590 | ..... | ..... | ..... | 364 | 3,760 | 488 | 354 | 505 | 157 | 98 | 100 |
| 29 | 900 | 590 | ..... | 1,080 | ..... | 7,790 | 555 | 334 | 460 | 154 | 96 | 125 |
| 30 | 750 | 625 | ..... | 1,030 | ..... | 4,720 | 590 | 320 | 409 | 152 | 95 | 100 |
| 31 | 600 | ..... | ..... | 1,030 | ..... | 3,540 | ..... | 306 | ..... | 150 | 94 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 8 to Nov. 11, 1911, fairly well defined by measurements made Sept. 8, 1911, and shape of later curve; Dec. 3, 1911, to Sept. 30, 1913, well defined.

Discharge for periods for which gage heights are missing, estimated, as far as feasible, by comparison of record at this station with that of Middle Fork of Smith River near Crescent City.

*Monthly discharge of North Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 8–30 | 86 | 68 | 73.0 | 3,330 | C. |
| 1912. | | | | | |
| October | 300 | 67 | 115 | 7,070 | C. |
| January | 17,300 | 745 | 4,000 | 246,000 | C. |
| February | 19,700 | 790 | 3,300 | 190,000 | C. |
| March | 6,050 | 625 | 1,360 | 83,600 | B. |
| April | 6,050 | 450 | 989 | 58,800 | B. |
| May | 10,100 | 456 | 1,340 | 82,400 | B. |
| June | 1,140 | 334 | 555 | 33,000 | B. |
| July | 320 | 132 | 197 | 12,100 | B. |
| August | 132 | 94 | 107 | 6,580 | B. |
| September | 1,140 | 118 | 284 | 16,900 | B. |
| 1912–13. | | | | | |
| October | 1,200 | 90 | 323 | 19,900 | B. |
| March | 7,790 | 364 | 1,250 | 76,900 | B. |
| April | 5,910 | 488 | 1,480 | 88,100 | B. |
| May | 1,400 | 306 | 660 | 40,600 | B. |
| June | 665 | 176 | 298 | 17,700 | B. |
| July | 456 | 150 | 217 | 13,300 | C. |
| August | 148 | 94 | 119 | 7,320 | C. |
| September | 590 | 89 | 194 | 11,500 | C. |

## MIDDLE FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

LOCATION.—In the NE. ¼ SE. ¼ sec. 20, T. 17 N., R. 2 E., at highway bridge 800 feet above junction of North and Middle forks, one-eighth mile east of Gasquet, and about 14 miles northeast of Crescent City.

RECORDS AVAILABLE.—September 8, 1911, to September 30, 1913.

DRAINAGE AREA.—146 square miles.

GAGE.—Chain gage on bridge; length of chain, 47.61 feet. May 26, 1913, an inclined staff in two sections was installed on right bank 60 feet upstream from bridge. Original datum not maintained.

CHANNEL.—Bowlders and gravel; rough; somewhat shifting.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

ACCURACY.—Rating curves fairly well defined; results fair at low and medium stages. Estimates for high water, approximate.

COOPERATION.—Station maintained in cooperation with United States Forest Service and Mountain Power Co., through H. E. Green, engineer.

*Discharge measurements of Middle Fork of Smith River near Crescent City, Cal., during the year ending Sept. 30, 1913.*

[Made by Charles Leidl.]

| Date. | Gage height staff gage. | Gage height chain gage. | Discharge. | Date. | Gage height staff gage. | Gage height chain gage. | Discharge. |
|---|---|---|---|---|---|---|---|
| | *Feet.* | *Feet.* | *Sec.-ft.* | | *Feet.* | *Feet.* | *Sec.-ft.* |
| Oct. 1 | ..... | 4.00 | 90 | Apr. 7 | ..... | 7.00 | 1,500 |
| Nov. 15 | ..... | 7.86 | 2,170 | 8 | ..... | 6.78 | 1,320 |
| 16 | ..... | 7.04 | 1,380 | May 26 | ..... | 5.35 | 419 |
| 17 | ..... | 6.61 | 983 | 29 | 5.36 | 5.00 | 359 |
| Feb. 16 | ..... | 5.78 | 567 | June 17 | 4.85 | ..... | 205 |
| 17 | ..... | 5.96 | 720 | Sept. 21 | 4.24 | 3.80 | 72 |
| Mar. 30 | ..... | 7.75 | 2,150 | 21 | 4.24 | 3.80 | 72 |
| 31 | ..... | 7.24 | 1,650 | | | | |

*Daily gage height, in feet, of Middle Fork of Smith River near Crescent City, Cal., for the year ending Sept. 30, 1913.*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.01 | ..... | 5.3 | ..... | 6.25 | 4.85 | 6.8 | 5.45 | 5.45 | 4.88 | 4.50 | 3.79 |
| 2 | 3.95 | 4.96 | 5.3 | 7.3 | ..... | ..... | 6.5 | 5.6 | 5.4 | 4.82 | ..... | 3.79 |
| 3 | 3.89 | ..... | 5.3 | 6.9 | ..... | 5.1 | 6.3 | 5.65 | 5.35 | 4.98 | 4.50 | 4.68 |
| 4 | 3.88 | 5.4 | 5.55 | 6.7 | ..... | 5.0 | 6.6 | ..... | 5.35 | ..... | 4.45 | 4.70 |
| 5 | 3.89 | 7.6 | 5.35 | ..... | ..... | 5.05 | 8.6 | 5.8 | 5.2 | ..... | 4.40 | ..... |
| 6 | 3.92 | 11.4 | 5.3 | 6.1 | ..... | 4.98 | ..... | ..... | 5.15 | ..... | 4.45 | ..... |
| 7 | 3.91 | 8.1 | 5.15 | 6.1 | ..... | 5.1 | 7.2 | 5.75 | 5.15 | ..... | 4.40 | ..... |
| 8 | 3.92 | ..... | 5.15 | 8.0 | ..... | 5.05 | 7.0 | 5.8 | 5.1 | ..... | 4.38 | 4.30 |
| 9 | 3.92 | ..... | ..... | 7.2 | ..... | 5.25 | 6.9 | 5.95 | 5.05 | ..... | 4.40 | ..... |
| 10 | 3.91 | ..... | ..... | 6.6 | ..... | ..... | 6.6 | 6.3 | 4.96 | ..... | 4.35 | ..... |
| 11 | 3.91 | ..... | 5.2 | 6.4 | 5.65 | ..... | 6.5 | ..... | 4.95 | ..... | 4.40 | ..... |
| 12 | 3.89 | ..... | 5.25 | ..... | ..... | ..... | 6.5 | 6.5 | 4.95 | ..... | ..... | ..... |
| 13 | 3.89 | ..... | ..... | 10.5 | 5.65 | 4.96 | ..... | 6.1 | ..... | 4.72 | ..... | ..... |
| 14 | 3.88 | ..... | ..... | 9.0 | 5.65 | 4.91 | 6.4 | 5.75 | ..... | ..... | ..... | 3.73 |
| 15 | 3.89 | 7.9 | ..... | 8.3 | 5.65 | 4.86 | 6.2 | 5.75 | 4.90 | ..... | ..... | 3.81 |
| 16 | ..... | 7.0 | ..... | 7.9 | 5.65 | ..... | 6.0 | 5.75 | 4.88 | ..... | ..... | 3.85 |
| 17 | ..... | 6.6 | ..... | 8.2 | 5.95 | 4.84 | 5.9 | 5.75 | 4.85 | ..... | ..... | 3.75 |
| 18 | ..... | 6.25 | ..... | 12.9 | ..... | ..... | 5.75 | ..... | 4.85 | ..... | ..... | 3.75 |
| 19 | ..... | 7.2 | ..... | ..... | ..... | ..... | 5.6 | 5.6 | 4.88 | ..... | ..... | 3.75 |
| 20 | ..... | ..... | ..... | 8.3 | ..... | 5.05 | ..... | 5.6 | 4.82 | ..... | ..... | 3.75 |
| 21 | 3.95 | ..... | ..... | ..... | ..... | 5.5 | 5.65 | ..... | 4.81 | ..... | 3.85 | 3.80 |
| 22 | 4.73 | ..... | ..... | 7.2 | ..... | 5.75 | 5.5 | ..... | 5.1 | ..... | 3.90 | ..... |
| 23 | 5.7 | ..... | ..... | ..... | ..... | 5.6 | 5.35 | 5.3 | 4.98 | ..... | ..... | ..... |
| 24 | ..... | ..... | ..... | ..... | ..... | 5.35 | 5.35 | 5.5 | 4.90 | ..... | ..... | ..... |
| 25 | ..... | ..... | ..... | ..... | ..... | 5.25 | 5.65 | 5.25 | 4.89 | ..... | ..... | ..... |
| 26 | 5.45 | ..... | ..... | ..... | ..... | 5.2 | 5.7 | 5.4 | 4.88 | ..... | ..... | ..... |
| 27 | 4.96 | ..... | ..... | ..... | 4.87 | 5.15 | ..... | ..... | 5.2 | ..... | ..... | ..... |
| 28 | 4.78 | ..... | ..... | ..... | 4.92 | 6.7 | 5.35 | ..... | ..... | ..... | ..... | ..... |
| 29 | ..... | 5.3 | ..... | 6.25 | ..... | 8.4 | 5.4 | 5.05 | ..... | ..... | ..... | ..... |
| 30 | ..... | 5.35 | ..... | 6.05 | ..... | 8.1 | 5.25 | ..... | 4.92 | ..... | ..... | ..... |
| 31 | ..... | ..... | ..... | 6.1 | ..... | 7.4 | ..... | ..... | ..... | ..... | 3.79 | ..... |

NOTE.—Maximum recorded gage heights (chain gage): Nov. 6, 1912, 12.9 feet at 8 a. m.; Jan. 18, 1913, 14.2 feet at 7 a. m.

Gage heights June 1 to Aug. 11, Sept. 3, 4, and 8 refer to datum of the staff gage; all others to datum of chain gage.

*Daily discharge, in second-feet, of Middle Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913.*

| Day. | Sept. | Day. | Sept. | Day. | Sept. |
|---|---|---|---|---|---|
| 1911. | | 1911. | | 1911. | |
| 1 | ..... | 11 | 70 | 21 | 69 |
| 2 | ..... | 12 | 78 | 22 | 69 |
| 3 | ..... | 13 | 92 | 23 | 68 |
| 4 | ..... | 14 | 73 | 24 | 68 |
| 5 | ..... | 15 | 73 | 25 | 68 |
| 6 | ..... | 16 | 73 | 26 | 78 |
| 7 | ..... | 17 | 70 | 27 | 70 |
| 8 | 70 | 18 | 70 | 28 | 70 |
| 9 | 70 | 19 | 70 | 29 | 68 |
| 10 | 70 | 20 | 69 | 30 | 65 |
| | | | | 31 | ..... |

*Daily discharge, in second-feet, of Middle Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913*—Continued.

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911–12. | | | | | | | | | | | | |
| 1 | 67 | 62 | 115 | 420 | 1,010 | 600 | 532 | 6,610 | 480 | 174 | 108 | 112 |
| 2 | 69 | ..... | 115 | 295 | 820 | 555 | 510 | 3,300 | 410 | 178 | 98 | 166 |
| 3 | 70 | ..... | 112 | 295 | 790 | 532 | 510 | 1,920 | 410 | 180 | 104 | 200 |
| 4 | 74 | 60 | 108 | 240 | 850 | 510 | 470 | 1,460 | 375 | 154 | 96 | 146 |
| 5 | 78 | ..... | 165 | 230 | 1,150 | 578 | 450 | 1,200 | 375 | 150 | 102 | 265 |
| 6 | 73 | ..... | 345 | 240 | 1,010 | 700 | 450 | 945 | 315 | 144 | 106 | 363 |
| 7 | 68 | ..... | 280 | 2,520 | 880 | 900 | 431 | 880 | 315 | 154 | 105 | 265 |
| 8 | 96 | ..... | 215 | 1,550 | 1,080 | 870 | 412 | 850 | 290 | 160 | 93 | 200 |
| 9 | 125 | ..... | 182 | 3,900 | 1,380 | 675 | 378 | 820 | 272 | 152 | 92 | 154 |
| 10 | 124 | 250 | 167 | 4,620 | 1,920 | 650 | 412 | 650 | 260 | 147 | 99 | 142 |
| 11 | 122 | 139 | 151 | 2,120 | 2,020 | 625 | 395 | 650 | 258 | 147 | 102 | 117 |
| 12 | 120 | ..... | 143 | 8,560 | 1,550 | 625 | 395 | 540 | 315 | 144 | 97 | 114 |
| 13 | 119 | ..... | 137 | 7,520 | 1,380 | 675 | 360 | 540 | 330 | 140 | 95 | 112 |
| 14 | 135 | ..... | ..... | 3,300 | 1,920 | 625 | 350 | 520 | 360 | 138 | 90 | 104 |
| 15 | 150 | 2,850 | ..... | 2,520 | 1,730 | 1,770 | 350 | 480 | 300 | 140 | 99 | 100 |
| 16 | 140 | ..... | ..... | 1,730 | 8,560 | 2,150 | 350 | 392 | 240 | 132 | 100 | 102 |
| 17 | 275 | ..... | ..... | 1,380 | 13,000 | 1,960 | 330 | 375 | 225 | 124 | 90 | 102 |
| 18 | 225 | ..... | ..... | 1,080 | 6,610 | 1,510 | 330 | 375 | 200 | 128 | 89 | 102 |
| 19 | 175 | ..... | ..... | 1,010 | 3,950 | 1,280 | 310 | 392 | 210 | 112 | 89 | 104 |
| 20 | 125 | ..... | ..... | 880 | 2,550 | 995 | 310 | 520 | 240 | 117 | 90 | 102 |
| 21 | 100 | ..... | ..... | 732 | 1,860 | 810 | 330 | 520 | 258 | 116 | 85 | 102 |
| 22 | 75 | ..... | 225 | 650 | 1,510 | 755 | 350 | 462 | 235 | 122 | 85 | 98 |
| 23 | 65 | ..... | 328 | 625 | 1,350 | 782 | 350 | 410 | 245 | 120 | 89 | 94 |
| 24 | 65 | ..... | 280 | 912 | 1,060 | 741 | 470 | 410 | 232 | 126 | 87 | 90 |
| 25 | 65 | ..... | ..... | 8,040 | 900 | 700 | 530 | 445 | 198 | 117 | 84 | 92 |
| 26 | 65 | ..... | 238 | 7,130 | 870 | 650 | 532 | 480 | 206 | 114 | 86 | 93 |
| 27 | 65 | ..... | 420 | 4,020 | 755 | 650 | 470 | 705 | 208 | 108 | 83 | 93 |
| 28 | 65 | ..... | ..... | 3,020 | 675 | 625 | 1,120 | 560 | 198 | 101 | 92 | 100 |
| 29 | 64 | ..... | ..... | 2,020 | 650 | 675 | 1,770 | 605 | 178 | 104 | 91 | 100 |
| 30 | 63 | 119 | ..... | 1,640 | ..... | 600 | 2,960 | 582 | 182 | 104 | 87 | 86 |
| 31 | 62 | ..... | ..... | 1,320 | ..... | 566 | ..... | 480 | ..... | 101 | 100 | ..... |
| 1912–13. | | | | | | | | | | | | |
| 1 | 96 | ..... | 375 | ..... | 900 | 285 | 1,280 | 490 | 405 | 214 | 120 | 69 |
| 2 | 90 | 275 | 375 | 1,550 | ..... | 320 | 1,060 | 555 | 385 | 196 | 120 | 69 |
| 3 | 84 | ..... | 375 | 1,220 | ..... | 360 | 930 | 578 | 368 | 244 | 120 | 160 |
| 4 | 83 | 410 | 462 | 1,080 | ..... | 330 | 1,130 | 615 | 368 | 237 | 110 | 165 |
| 5 | 84 | 1,820 | 392 | ..... | ..... | 345 | 2,960 | 650 | 315 | 229 | 100 | 144 |
| 6 | 87 | 6,220 | 375 | 705 | ..... | 324 | 2,280 | 640 | 298 | 222 | 110 | 122 |
| 7 | 86 | 2,320 | 330 | 705 | ..... | 360 | 1,600 | 625 | 298 | 214 | 100 | 101 |
| 8 | 87 | ..... | 330 | 2,220 | ..... | 345 | 1,430 | 650 | 280 | 207 | 96 | 80 |
| 9 | 87 | ..... | ..... | 1,460 | ..... | 412 | 1,350 | 728 | 265 | 200 | 100 | 77 |
| 10 | 86 | ..... | ..... | 1,010 | ..... | 385 | 1,130 | 930 | 238 | 192 | 90 | 74 |
| 11 | 86 | ..... | 345 | 880 | 578 | 365 | 1,060 | 1,000 | 235 | 185 | 100 | 71 |
| 12 | 84 | ..... | 360 | ..... | ..... | 340 | 1,060 | 1,060 | 235 | 177 | 98 | 69 |
| 13 | 84 | ..... | ..... | 5,100 | 578 | 318 | 1,020 | 810 | 230 | 170 | 96 | 66 |
| 14 | 83 | ..... | ..... | 3,300 | 578 | 303 | 995 | 625 | 225 | 167 | 93 | 63 |
| 15 | 84 | 2,120 | ..... | 2,520 | 578 | 288 | 870 | 625 | 220 | 165 | 91 | 72 |
| 16 | 84 | 1,300 | ..... | 2,120 | 578 | 285 | 755 | 625 | 214 | 162 | 89 | 78 |
| 17 | 84 | 1,010 | ..... | 2,420 | 728 | 282 | 700 | 625 | 205 | 159 | 87 | 65 |
| 18 | 80 | 790 | ..... | 8,170 | ..... | 305 | 625 | 590 | 205 | 157 | 85 | 65 |
| 19 | 150 | 1,460 | ..... | ..... | ..... | 325 | 555 | 555 | 214 | 154 | 82 | 65 |
| 20 | 175 | ..... | ..... | 2,650 | ..... | 345 | 565 | 555 | 196 | 152 | 80 | 65 |
| 21 | 90 | ..... | ..... | ..... | ..... | 510 | 578 | 510 | 193 | 149 | 78 | 70 |
| 22 | 218 | ..... | ..... | 1,600 | ..... | 625 | 510 | 470 | 280 | 146 | 85 | 71 |
| 23 | 520 | ..... | ..... | ..... | ..... | 555 | 450 | 430 | 244 | 144 | 83 | 70 |
| 24 | 250 | ..... | ..... | ..... | ..... | 450 | 450 | 510 | 220 | 141 | 81 | 70 |
| 25 | 350 | ..... | ..... | ..... | ..... | 412 | 578 | 412 | 217 | 138 | 79 | 70 |
| 26 | 428 | ..... | ..... | ..... | ..... | 395 | 600 | 470 | 214 | 136 | 78 | 70 |
| 27 | 275 | ..... | ..... | ..... | 291 | 378 | 525 | 430 | 315 | 133 | 76 | 70 |
| 28 | 230 | ..... | ..... | ..... | 306 | 1,200 | 450 | 390 | 285 | 131 | 74 | 70 |
| 29 | 500 | 375 | ..... | 900 | ..... | 2,750 | 470 | 345 | 256 | 128 | 72 | 90 |
| 30 | 425 | 392 | ..... | 782 | ..... | 2,450 | 412 | 345 | 226 | 125 | 71 | 70 |
| 31 | 350 | ..... | ..... | 810 | ..... | 1,770 | ..... | 390 | ..... | 122 | 69 | ..... |

NOTE.—Daily discharge determined from rating curves applicable as follows: Sept. 8, 1911, to Feb. 17, 1912, and Feb. 18 to May 1, 1912 (chain gage readings) from two poorly defined rating curves; May 2, 1912, to Jan. 18, 1913 (chain gage) from rating curve fairly well defined below 3,000 second-feet; Jan. 19 to Sept. 30, 1913 (chain gage readings), from curve fairly well defined below 3,000 second-feet; June 1 to Sept. 30, 1913 (staff gage readings), from well defined curve. Discharge for days for which gage height was not recorded, estimated, so far as feasible, by comparison of record with that of North Fork of Smith River near Crescent City. High-water estimates are based on extension of rating curves and are only approximate.

*Monthly discharge of Middle Fork of Smith River near Crescent City, Cal., for the years ending Sept. 30, 1911–1913.*

| Month. | Discharge in second-feet. | | | Run-off (total in acre-feet). | Accuracy. |
|---|---|---|---|---|---|
| | Maximum. | Minimum. | Mean. | | |
| 1911. | | | | | |
| September 8–30 | 92 | 65 | 71.3 | 3,250 | C. |
| 1911–12. | | | | | |
| October | 275 | 62 | 103 | 6,330 | C. |
| January | 8,560 | 230 | 2,400 | 148,000 | C. |
| February | 13,000 | 650 | 2,200 | 127,000 | D. |
| March | 2,150 | 510 | 850 | 52,300 | D. |
| April | 2,960 | 310 | 564 | 33,600 | D. |
| May | 6,610 | 375 | 938 | 57,700 | B. |
| June | 480 | 178 | 277 | 16,500 | B. |
| July | 180 | 101 | 134 | 8,240 | B. |
| August | 108 | 83 | 94.0 | 5,780 | B. |
| September | 363 | 86 | 134 | 7,970 | B. |
| 1912–13. | | | | | |
| October | 520 | 80 | 177 | 10,900 | C. |
| March | 2,750 | 282 | 584 | 35,900 | B. |
| April | 2,960 | 412 | 946 | 56,300 | B. |
| May | 1,060 | 345 | 588 | 36,200 | B. |
| June | 410 | 192 | 262 | 15,600 | B. |
| July | 244 | 122 | 171 | 10,500 | C. |
| August | 120 | 692 | 90.7 | 5,580 | C. |
| September | 165 | 63 | 82.0 | 4,880 | C. |

## MISCELLANEOUS MEASUREMENTS.

The following miscellaneous discharge measurements were made on streams in the Pacific basins of California in the year ending September 30, 1913:

*Miscellaneous measurements for the year ending Sept. 30, 1913.*

**Southern Pacific Ocean drainage basins.**

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Oct. 3, 1912 | Ellis flume | Sweetwater River. | In flume, about 300 feet above U. S. Geological Survey gage on Sweetwater River near Descanso, Cal. | ..... | 0.2 |
| Dec. 16, 1912 | San Diego River [a] | Pacific Ocean | Just above mouth of Boulder Creek, 13 miles northeast of Lakeside, Cal., in NE. ¼ NE. ¼ sec. 11, T. 14 S., R. 2 E. | ..... | [b] 1.1 |
| Feb. 16, 1913 | do | do | do | ..... | 2.4 |
| Mar. 16, 1913 | do | do | do | ..... | 15 |
| May 13, 1913 | do | do | do | ..... | 2.4 |
| Dec. 16, 1912 | South Fork of San Diego River. | San Diego River | About one-half mile above mouth, about 4 miles north of Alpine, in NE. ¼ sec. 10, T. 15 S., R. 2 E. | ..... | [c] 0.1 |
| May 13, 1913 | do | do | do | ..... | Dry. |
| Apr. 2, 1913 | San Diego flume | do | Sand Creek crossing, NE. ¼ sec. 22, T. 14 S., R. 2 E. | ..... | 40 |
| Mar. 29, 1913 | Santa Fe ranch ditch. [a] [d] | San Dieguito River. | Santa Fe pumping plant about 4½ miles northeast of Del Mar, Cal., about 300 feet above U. S. Geological Survey gage on San Dieguito River near Del Mar, Cal. | ..... | 6.7 |
| Mar. 13, 1913 | San Luis Rey River. [a] | Pacific Ocean | Mission bridge, a mile north of San Luis Rey, Cal., in NE. ¼ NW. ¼ sec. 8, T. 11 S., R. 4 W. | 54.73 | 41 |

[a] Made by engineers of Volcan Land & Water Co.
[b] Floats.
[c] Estimated.
[d] Water turned in ditch at noon Mar. 28, 1913.

*Miscellaneous measurements for the year ending Sept. 30, 1913.*—Continued.

**Southern Pacific Ocean drainage basins—Continued.**

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Feb. 6, 1913 | Canada Agua Caliente.[a] | San Luis Rey River. | About a mile southeast of Warner Springs, Cal. (Agua Caliente on Ramona quadrangle). | 1.03 | .5 |
| Jan. 9, 1913 | ....do | ....do | ....do | 1.04 | .3 |
| Mar. 1, 1913 | ....do.[a] | ....do | ....do | ..... | 1.1 |
| May 16, 1913 | ....do.[a] | ....do | ....do | .82 | .6 |
| Apr. 5, 1913 | ....do.[a] | ....do | ....do | .95 | 1.3 |
| June 14, 1913 | ....do | ....do | ....do | .75 | .2 |
| July 21, 1913 | Canada Verde Creek.[a] | ....do | About a mile southeast of Warner Springs, Cal. | 1.75 | 0.1 |
| Aug. 22, 1913 | ....do.[a] | ....do | ....do | 1.46 | .02 |
| Sept. 2, 1913 | ....do.[a] | ....do | ....do | 1.52 | .1 |
| Sept. 10, 1913 | ....do.[a] | ....do | ....do | 1.55 | .02 |
| Sept. 25, 1913 | ....do.[a] | ....do | ....do | ..... | .02 |
| Sept. 25, 1913 | Big Lake Creek.[a] | ....do | About 2 miles west of Warner Springs, Cal. | 1.95 | .02 |
| Feb. 3, 1913 | Buena Vista Creek.[a] | ....do | At Monkey Hill, about 6 miles southwest of Warner Springs, Cal. | ..... | 1.0 |
| May 13, 1913 | ....do.[a] | ....do | ....do | ..... | .1 |
| Sept. 2, 1913 | ....do.[a] | ....do | ....do | ..... | .02 |
| Sept. 9, 1913 | ....do.[a] | ....do | ....do | ..... | .02 |
| Jan. 19, 1913 | Pauma Creek | ....do | Near county highway ford on road from Pala to Pauma Indian Reservation near Pala, Cal. | ..... | .4 |
| Apr. 18, 1913 | ....do | ....do | ....do | .96 | 8.5 |
| May 9, 1913 | ....do | ....do | ....do | ..... | Dry. |
| Dec. 18, 1912 | Moreno ditch | ....do | Pala, Cal. | ..... | .4 |
| Feb. 20, 1913 | ....do | ....do | ....do | ..... | .2 |
| Mar. 13, 1913 | ....do.[a] | ....do | ....do | ..... | .3 |
| May 9, 1913 | ....do | ....do | ....do | ..... | 2.1 |
| June 13, 1913 | ....do | ....do | ....do | ..... | .8 |
| Jan. 17, 1913 | Libby ditch | ....do | NE. ¼ NE. ¼ sec. 4, T. 11 S., R. 4 W., 2 miles northeast of San Luis Rey. | 1.34 | [b] 3.2 |
| Feb. 1, 1913 | ....do | ....do | ....do | .96 | .4 |
| Apr. 8, 1913 | ....do | ....do | ....do | 1.43 | 1.8 |
| Do | ....do | ....do | ....do | 1.01 | .3 |
| Apr. 19, 1913 | ....do | ....do | ....do | ..... | Dry. |
| Apr. 23, 1913 | City Creek | Santa Ana River | About 500 feet below intake of City Creek canal near Highlands. (Canal dry.) | ..... | 6.8 |
| Oct. 23, 1912 | Redlands canal | ....do | In flume on trestle crossing at Mill Creek near Mentone, Cal. | ..... | 31 |
| Oct. 24, 1912 | Devil Canyon Creek. | ....do | At mouth of canyon, at U. S. Geological Survey gaging station, SE. ¼ NE. ¼ sec. 6, T. 1 N., R. 4 W. | 1.59 | 1.2 |
| Dec. 10, 1912 | ....do | ....do | ....do | 1.61 | 1.9 |
| Jan. 14, 1913 | ....do | ....do | ....do | 1.54 | 1.1 |
| Feb. 10, 1913 | ....do | ....do | ....do | 1.62 | 1.7 |
| Mar. 3, 1913 | ....do | ....do | ....do | 1.86 | 3.6 |
| Apr. 4, 1913 | ....do | ....do | ....do | 1.72 | 2.1 |
| Apr. 23, 1913 | ....do | ....do | ....do | 1.68 | 2.0 |
| July 11, 1913 | ....do | ....do | ....do | 1.43 | 4 |
| June 4, 1913 | Santa Clara River | Pacific Ocean | About 300 feet above mouth of San Francisquito Creek at Castac (Camulos quadrangle), about 4 miles northwest of Saugus, Cal. | ..... | 13 |
| Aug. 13, 1913 | ....do | ....do | ....do | ..... | 12 |
| Oct. 11, 1912 | ....do | ....do | At discontinued U. S. Geological Survey gaging station at Fillmore, Cal., in NW. ¼ sec. 31, T. 4 N., R. 19 W. | 2.21 | 26 |
| Nov. 6, 1912 | ....do | ....do | ....do | 2.07 | 17 |
| Dec. 4, 1912 | ....do | ....do | ....do | 2.07 | 17 |
| Jan. 7, 1913 | ....do | ....do | ....do | 2.10 | 16 |
| June 25, 1913 | ....do | ....do | ....do | [c] | 15 |
| Aug. 13, 1913 | San Francisquito Creek. | Santa Clara River. | About 300 feet above junction with Santa Clara River at Castac, about 4 miles northeast of Saugus, Cal. | ..... | 1.5 |

[a] Made by engineers of Volcan Land & Water Co. [b] Estimated.
[c] Gage of U. S. Geological Survey out of water owing to change in channel.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**Southern Pacific Ocean drainage basins**—Continued.

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Nov. 7,1912 | Sabin ditch | Piru Creek | Southern Pacific Co.'s bridge at Piru, Cal., about 1½ miles below U. S. Geological Survey gaging station on Piru Creek. | | 4.6 |
| Dec. 4,1912 | do | do | do | | 3.1 |
| May 23,1913 | do | do | do | | 6.6 |
| June 26,1913 | do | do | do | | 6.5 |
| June 7,1913 | Fillmore Irrigation Co.'s ditch. | Sespe Creek | About 500 feet below diversion dam, in sec. 1, T. 4 N., R. 20 W., which is 4 miles above U. S. Geological Survey gaging station on Sespe Creek near Sespe, Cal. | [a] 0.80 | 17 |
| Dec. 3,1912 | Sisar Creek | Santa Paula Creek. | Near mouth, just above U. S. Geological Survey gaging station on Santa Paula Creek, SW. ¼ NW. ¼ sec. 16, T. 4 N., R. 21 W. | | [b] 5 |
| Jan. 31,1913 | do | do | do | | .9 |
| Mar. 1,1913 | do | do | do | | 16 |
| Mar. 7,1913 | do | do | do | | 9.1 |
| Apr. 30,1913 | do | do | do | | 2.4 |
| May 22,1913 | do | do | do | | 1.4 |
| June 5,1913 | do | do | do | | 1.6 |
| June 24,1913 | do | do | do | | .9 |
| Aug. 13,1913 | do | do | do | | .4 |
| Oct. 8,1912 | North Fork of Matilija Creek. | Ventura River | Near mouth, above Shelden flume near Nordhoff, Cal., SW. ¼ NW. ¼ sec. 28, T. 5 N., R. 23 W. | | 1.1 |
| Dec. 2,1912 | do | do | do | | 1.5 |
| Jan. 6,1913 | do | do | do | | 2.5 |
| Jan. 30,1913 | do | do | do | | 2.1 |
| Mar. 8,1913 | do | do | do | | 21 |
| Apr. 29,1913 | do | do | do | | 3.6 |
| May 22,1913 | do | do | do | | 2.8 |
| June 25,1913 | do | do | do | | 2.0 |
| Aug. 14,1913 | do | do | do | | .8 |
| Oct. 8,1912 | Sheldon flume | North Fork of Matilija River. | Intake, SW. ¼ NW. ¼ sec. 28, T. 5 N., R. 23 W. | | 1.1 |
| Dec. 2,1912 | do | do | do | | 1.3 |
| Jan. 30,1913 | do | do | do | | Dry. |
| May 22,1913 | do | do | do | | 1.4 |
| June 25,1913 | do | do | do | | 1.6 |
| Aug. 14,1913 | do | do | do | | 1.0 |
| Oct. 8,1912 | Coyote Creek | Ventura River | Near mouth, about one-fourth mile above U. S. Geological Survey gaging station on Ventura River about 6 miles north of Ventura, Cal. | | .4 |
| Dec. 2,1912 | do | do | do | | .5 |
| Jan. 5,1913 | do | do | do | | 1.4 |
| Jan. 30,1913 | do | do | do | | 1.3 |
| Feb. 28,1913 | do | do | do | | 52 |
| Mar. 7,1913 | do | do | do | | 16 |
| Apr. 29,1913 | do | do | do | | 2.1 |
| May 22,1913 | do | do | do | | 1.5 |
| June 25,1913 | do | do | do | | .6 |
| Mar. 9,1913 | Greenfield canal [c] | Arroyo seco | 200 feet below head gate, 1½ miles northeast of U. S. Geological Survey gaging station on Arroyo seco, and 4¾ miles southwest of Greenfield, Cal. (By wading.) | 3.93 | 20 |
| Mar. 16,1913 | do [c] | do | do | 3.92 | 19 |
| Mar. 23,1913 | do [c] | do | do | 4.20 | 38 |
| Mar. 30,1913 | do [c] | do | do | 4.15 | 41 |
| Apr. 6,1913 | do [c] | do | do | 4.05 | 31 |
| Apr. 13,1913 | do [c] | do | do | 3.98 | 23 |
| Apr. 20,1913 | do [c] | do | do | 3.95 | 22 |
| Apr. 28,1913 | do [c] | do | do | 3.88 | 14 |
| May 4,1913 | do [c] | do | do | 3.85 | 14 |
| May 11,1913 | do [c] | do | do | 3.80 | 12 |
| May 18,1913 | do [c] | do | do | 3.75 | 7.5 |
| May 25,1913 | do [c] | do | do | 3.70 | 5.3 |

[a] Below reference point, which is center of cut nail in horizontal 2 by 4 inch plank on downstream side of footbridge, below fish screen (righthand side). Fish screen is about 300 feet below head gate.

[b] Estimated.

[c] Record furnished by Charles Pettitt, Soledad, Cal.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**San Joaquin River basin.**

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Oct. 4, 1912 | Kern River | Tulare Lake basin. | Inlet to Kern Lake, sec. 33, T. 18 S., R. 33 E. | ..... | 126 |
| Do | do | do | 100 feet below outlet of Kern Lake, sec. 4, T. 19 S., R. 33 E. | ..... | 123 |
| Oct. 2, 1912 | do | do | About one-fourth mile below mouth of Little Kern River, sec. 5, T. 21 S., R. 33 E. | ..... | 161 |
| Sept. 28, 1913 | do | do | 40 feet below mouth of Little Kern River, sec. 5, T. 21 S., R. 33 E. | ..... | 190 |
| Sept. 24, 1913 | do | do | Southern California Edison Power Co.'s proposed power-house site for Edison System No. 3, about 10 miles below U. S. Geological Survey gaging station on Kern River above Kernville, about 1 mile below mouth of Bullrun Creek, sec. 4, T. 25 S., R. 33 E. | 1.43 | 226 |
| Mar. 20, 1913 | do | do | Discontinued U. S. Geological Survey gaging station, one-half mile north of Isabella, one-half mile above South Fork of Kern River, in SW. ¼ sec. 17, T. 26 S., R. 3 E. | 0.85 | 8.7 |
| May 28, 1913 | do | do | do | 2.94 | 764 |
| Sept. 23, 1913 | do | do | do | .70 | 4.0 |
| Do | do | do | Below Borel power house, about 4 miles southwest of Bodfish, Cal. (By wading.) | ..... | 279 |
| Sept. 19, 1913 | do | do | Kern County Land Co.'s gaging station at mouth of lower canyon, in sec. 2, T. 29 S., R. 28 E., 5 miles northeast of Bakersfield, Cal. | ..... | 268 |
| Oct. 8, 1912 | Ninemile Creek | Kern River | Mouth, sec. 1, T. 20 S., R. 33 E. | ..... | 22 |
| Oct. 9, 1912 | Rattlesnake Creek | do | One mile above mouth, at trail crossing, sec. 2, T. 21 S., R. 33 E. | ..... | 9.4 |
| Sept. 29, 1913 | Little Kern River | do | Trail crossing on trail from Lloyd to Trout meadows, sec. 12, T. 20 S., R. 32 E. | ..... | 16 |
| Oct. 2, 1912 | do | do | Near mouth, sec. 31, T. 20 S., R. 33 E. | ..... | 13 |
| Sept. 28, 1913 | do | do | do | ..... | 17 |
| Oct. 9, 1912 | Freeman Creek | do | Mouth, sec. 7, T. 21 S., R. 33 E. | ..... | a1.2 |
| Oct. 10, 1912 | Durrwood Creek | do | Mouth, sec. 31, T. 21 S., R. 33 E. | ..... | 2.2 |
| Oct. 11, 1912 | Peppermint Creek | do | Mouth, sec. 36, T. 21 S., R. 32 E. | ..... | a1 |
| Sept. 27, 1913 | do | do | 500 feet above tower trail crossing, sec. 36, T. 21 S., R. 32 E. | ..... | 1.1 |
| Oct. 11, 1912 | Dry Creek | do | 200 feet below trail crossing, sec. 22, T. 22 S., R. 32 E. | ..... | 6.8 |
| Sept. 26, 1913 | do | do | do | ..... | 3.8 |
| Do | McClure Creek | do | Trail crossing, sec. 35, T. 22 S., R. 32 E. | ..... | 1.0 |
| June 2, 1913 | Brush Creek | do | Trail crossing, sec. 36, T. 22 S., R. 32 E. | ..... | 14 |
| Sept. 26, 1913 | do | do | do | ..... | 3.5 |
| June 3, 1913 | Tobias Creek | do | Soda Spring, one-third mile above mouth, sec. 23, T. 23 S., R. 32 E. | ..... | 4.4 |
| Sept. 25, 1913 | do | do | 400 feet above mouth, sec. 23, T. 23 S., R. 32 E. | ..... | 1.0 |
| June 4, 1913 | Salmon Creek | do | Road crossing near mouth, sec. 30, T. 23 S., R. 33 E. | ..... | 17 |
| Sept. 25, 1913 | do | do | do | ..... | 3.5 |
| Do | Corral Creek | do | Road crossing near mouth | ..... | .2 |
| Do | Little Brush Creek or Cannell Creek. | do | Road crossing near mouth, sec. 32, T. 24 S., R. 33 E. | ..... | Dry. |
| Sept. 24, 1913 | Bullrun Creek | do | Above diversions, one-half mile above mouth, sec. 5, T. 25 S., R. 33 E. | ..... | .8 |
| Oct. 13, 1912 | Powers ditch | South Fork of Kern River. | Flume at Warren Rankin ranch, about one-half mile above U. S. Geological Survey gaging station on South Fork of Kern River near Onyx, Cal. | ..... | 1.0 |
| June 10, 1913 | do | do | do | ..... | 1.4 |

a Estimated.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**San Joaquin River basin**—Continued.

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| June 10, 1913 | Upper Rankin ditch. | South Fork of Kern River. | Warren Rankin ranch, about 1,200 feet above U. S. Geological Survey gaging station on South Fork of Kern River near Onyx, NE. ¼ SW. ¼ sec. 24, T. 25 S., R. 35 E. | ..... | .4 |
| Do..... | Lower Rankin ditch. | .....do..... | Warren Rankin ranch, 200 feet above U. S. Geological Survey gaging station on South Fork of Kern River near Onyx. | ..... | Dry. |
| June 11, 1913 | Canebrake Creek.. | .....do ..... | Flume on Rankin road, sec. 25, T. 25 S., R. 35 E. | ..... | 2.1 |
| Oct. 11, 1913 | .....do..... | .....do..... | .....do..... | ..... | 1.9 |
| Sept. 21, 1913 | Southern California Edison Power Co.'s flume. | Kern River..... | About one-fourth mile below Democrat Springs, Cal., at automatic gage opposite flume tender's house, 100 feet below concrete sand box, sec. 5, T. 28 S., R. 31 E.; below Southern California Edison Power Co.'s dam, at intake, Edison System No. 1. | [a] 4.61 | 252 |
| Sept. 23, 1913 | Erskine Creek.... | .....do..... | Road crossing, about half a mile above mouth, sec. 6, T. 27 S., R. 33 E. | ..... | Dry. |
| Do..... | Bodfish Creek.... | .....do..... | Road crossing, about half a mile above mouth, sec. 12, T. 27 S., R. 33 E., at Bodfish. | ..... | Dry. |
| Sept. 22, 1913 | Clear Creek..... | .....do..... | Road crossing near mouth, about a mile south of Borel, Cal. | ..... | .2 |
| Sept. 22, 1913 | Mill Creek..... | .....do..... | Road crossing near mouth in sec. 25 (probably) T. 27 S., R. 32 E. | ..... | Dry. |
| Sept. 20, 1913 | Cow Creek..... | .....do..... | Road crossing near mouth..... | ..... | Dry. |
| Do..... | Lucas Creek..... | .....do..... | .....do..... | ..... | [b] 1 |
| Do..... | Cottonwood Creek | .....do..... | Upper road crossing..... | ..... | Trace. |
| Sept. 19, 1913 | .....do..... | .....do..... | Lower road crossing near mouth, about 12 miles east of Bakersfield, Cal. | ..... | Dry. |
| July 19, 1913 | Cactus Creek..... | North Fork of Kaweah River. | Mouth, SW. ¼ SW. ¼ sec. 12, T 16 S., R 28 E. | ..... | [b] ¾ |
| July 18, 1913 | Wolverton Creek. | Marble Fork of Kaweah River. | 200 feet above dam site, NE. ¼ sec. 29, T. 15 S., R. 30 E. | ..... | 1.6 |
| Oct. 23, 1912 | North Fork of Kings River. | Kings River..... | Discontinued U. S. Geological Survey gaging station at Dinkey Creek trail bridge near Cliff Camp, NE. ¼ NW. ¼ sec. 12, T. 11 S., R. 27 E., about 20 miles southeast of Ockenden, Cal. | [c] .48 | 9.7 |
| June 18, 1913 | .....do..... | .....do..... | .....do..... | 2.55 | 267 |
| Apr. 28, 1913 | Sanger Lumber flume. | .....do..... | Opposite U. S. Geological Survey gaging station on Kings River near Sanger, Cal., NW. ¼ sec. 8, T. 13 S., R. 24 E. | ..... | 4.0 |
| June 11, 1913 | .....do..... | .....do..... | .....do..... | ..... | 8.3 |
| Oct. 30, 1912 | Nelder Creek..... | Fresno River.... | Discontinued U. S. Geological Survey gaging station about a mile above junction with Lewis Fork of Fresno River, about 3 miles northeast of Fresno Flats, Cal. | 0.61 | 6.3 |

[a] Old float gage read 4.52 feet.
[b] Estimated.
[c] Old gage read 0.24 feet.

NOTE.—The following gage heights were observed at discontinued U. S. Geological Survey gaging station on North Fork of Kings River, near Ockenden, Cal., during 1913.

| | Feet. |
|---|---|
| Aug. 16 | 2.9 |
| 22 | 2.2 |
| 28 | 2.6 |
| 30 | 3.6 |
| 31 | 3.3 |
| Sept. 8 | 2.6 |
| 10 | 1.8 |
| 16 | 1.9 |

Readings Aug. 28 to Sept. 10 made by Collins Bros.; for other days by U. S. Forest Service.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**San Joaquin River basin**—Continued.

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Oct. 28, 1912 | North Fork of Fresno River. | Fresno River... | Discontinued U. S. Geological Survey gaging station at Miami Creek ranger station, 2½ miles west of Sugar Pine, Cal. | 0.42 | 3.2 |
| Oct. 15, 1912 | Madera Sugar Pine Co.'s lumber flume. | Lewis Fork of Fresno River. | Near U. S. Geological Survey gaging station on Fresno River, 6 miles northeast of Knowles, Cal., NW. ¼ sec. 15, T. 8 S., R. 20 E. | ..... | 4.5 |
| Oct. 31, 1912 | .....do..... | .....do..... | .....do..... | ..... | 5.4 |
| May 3, 1913 | .....do..... | .....do..... | .....do..... | ..... | 6.2 |
| May 20, 1913 | Big Creek..... | South Fork of Merced River. | Mouth, about one-half mile west of Wawona, Cal. | ..... | 21 |
| May 23, 1913 | Rush Creek..... | .....do..... | Near mouth, about 1⅞ miles northwest of Wawona, Cal. | ..... | 2.9 |
| Aug. 29, 1913 | Lyell Fork of Tuolumne River. | Tuolumne River | Below Kuna Creek and above Ireland Creek (Mount Lyell quadrangle). | ..... | *a* 80 |
| Aug. 30, 1913 | .....do..... | .....do..... | 600 feet above junction with Dana Fork of Tuolumne River, SW. ¼ sec. 3, T. 1 S., R. 24 E. (Mount Lyell quadrangle). | ..... | *a* 107 |
| Do..... | Dana Fork of Tuolumne River. | .....do..... | 900 feet above mouth of Lyell Fork of Tuolumne River, SW. ¼ sec. 3, T. 1 S., R. 24 E. | ..... | *a* 61 |
| Apr. 23, 1913 | Oakdale canal.... | Stanislaus River | Sec. 21 T. 1 S., R. 12 E., at Goodwin dam. | ..... | 43 |
| June 13, 1913 | .....do..... | .....do..... | .....do..... | ..... | 49 |
| Aug. 23, 1913 | .....do..... | .....do..... | .....do..... | ..... | 45 |
| Apr. 23, 1913 | South San Joaquin canal. | .....do..... | .....do..... | ..... | 121 |
| June 13, 1913 | .....do..... | .....do..... | .....do..... | ..... | 132 |
| Aug. 23, 1913 | .....do..... | .....do..... | .....do..... | ..... | 183 |

**Sacramento River basin.**

| | | | | | |
|---|---|---|---|---|---|
| May 28, 1913 | Sacramento River | San Francisco Bay. | Bridge at Colusa, Cal..... | *b* 6.60 | 10,800 |
| June 11, 1913 | .....do..... | .....do..... | .....do..... | *b* 3.80 | 7,790 |
| June 24, 1913 | .....do..... | .....do..... | .....do..... | *b* 2.51 | 6,760 |
| May 23, 1913 | .....do..... | .....do..... | From boat 700 feet below drawbridge at Meridian, Cal. | *c* 44.10 | 10,300 |
| June 11, 1913 | .....do..... | .....do..... | .....do..... | *c* 41.20 | 8,220 |
| June 25, 1913 | .....do..... | .....do..... | .....do..... | *c* 39.70 | 7,040 |
| Oct. 23, 1912 | .....do..... | .....do..... | Bridge at Knights Landing, Grafton postoffice. | *b* 0.62 | 5,090 |
| Jan. 17, 1913 | .....do..... | .....do..... | .....do..... | *b* 12.48 | 17,400 |
| Jan. 22, 1913 | .....do..... | .....do..... | .....do..... | *b* 12.85 | 17,400 |
| Jan. 30, 1913 | .....do..... | .....do..... | .....do..... | *b* 9.72 | 14,600 |
| Feb. 19, 1913 | .....do..... | .....do..... | .....do..... | *b* 7.20 | 12,900 |
| Mar. 4, 1913 | .....do..... | .....do..... | .....do..... | *b* 4.88 | 10,400 |
| Mar. 8, 1913 | .....do..... | .....do..... | .....do..... | *b* 4.90 | 10,100 |
| May 5, 1913 | .....do..... | .....do..... | .....do..... | *b* 8.67 | 12,200 |
| May 19, 1913 | .....do..... | .....do..... | .....do..... | *b* 9.62 | 11,700 |
| May 30, 1913 | .....do..... | .....do..... | .....do..... | *b* 8.30 | 11,000 |
| June 12, 1913 | .....do..... | .....do..... | From boat 500 feet above bridge at Knights Landing. | *b* 4.35 | 8,130 |
| June 26, 1913 | .....do..... | .....do..... | .....do..... | *b* 2.01 | 6,580 |
| Aug. 28, 1913 | .....do..... | .....do..... | .....do..... | —1.50 | 4,570 |
| Sept. 27, 1913*d* | .....do..... | .....do..... | From boat one-half mile above Riverside Club, about 4 miles southwest of Weather Bureau gage at Sacramento, Cal. | *b* 3.15 | 4,500 |
| Mar. 10, 1913 | Wilcox ditch..... | Diverts from Hat Creek. | Above all lateral ditches, Hawkins ranch, and above U. S. Geological Survey gage on Hat, 6 miles south of Hat Creek, Cal., Sec. 5, T. 33 N., R. 5 E. | 2.34 | 4.0 |
| Sept. 16, 1913 | Hatchet Creek.... | Pit River..... | Near bridge on Burney Road, 6 miles east of Montgomery Creek, Cal. | ..... | 12 |
| May 6, 1913 | Ditch on right bank. | Diverts from North Fork of. | About 3 miles above U. S. Geological Survey gage on North Fork of Cottonwood Creek at Ono, Cal. | ..... | 5.2 |

*a* Recent rains probably affected flow.
*b* U. S. Weather Bureau gage.
*c* U. S. Engineer's datum.
*d* Assisted by E. E. Bonnelle, City Engineer's office, Sacramento.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**Sacramento River basin**—Continued.

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| May 7, 1912 | Antelope Creek [a] | Sacramento River. | ¼ mile above mouth of canyon, 8 miles northeast of Red Bluff, Cal., 2 miles below intake of Red Bluff pipe line. | | 107 |
| June 9, 1912 | do | do | do | | 72 |
| June 14, 1912 | do | do | do | | 62 |
| June 18, 1912 | do | do | do | | 51 |
| June 19, 1912 | do | do | do | 1.30 | 52 |
| June 20, 1912 | do | do | do | 1.30 | 52 |
| June 21, 1912 | do | do | do | 1.29 | 52 |
| June 22, 1912 | do | do | do | 1.29 | 52 |
| June 24, 1912 | do | do | do | 1.35 | 55 |
| June 25, 1912 | do | do | do | 1.30 | 51 |
| June 26, 1912 | do | do | do | 1.27 | 49 |
| June 29, 1912 | do | do | do | 1.25 | 42 |
| July 1, 1912 | do | do | do | 1.25 | 46 |
| July 3, 1912 | do | do | do | 1.23 | 43 |
| July 5, 1912 | do | do | do | 1.22 | 43 |
| July 8, 1912 | do | do | do | 1.22 | 42 |
| July 10, 1912 | do | do | do | 1.21 | 40 |
| July 12, 1912 | do | do | do | 1.20 | 37 |
| July 15, 1912 | do | do | do | 1.19 | 39 |
| July 17, 1912 | do | do | do | 1.18 | 37 |
| July 19, 1912 | do | do | do | 1.19 | 39 |
| July 26, 1912 | do | do | do | 1.17 | 37 |
| Oct. 25, 1912 | Mill Creek [b] | Cottonwood Creek, Sacramento River. | Wading at, discontinued, U. S. Geological Survey gaging station near Los Molinos, Cal. | 0.68 | 114 |
| Jan. 16, 1913 | do [b] | do | Footbridge at, discontinued, U. S. Geological Survey gaging station near Los Molinos, Cal. | 2.48 | 682 |
| June 21, 1912 | South Feather Land & Water Co.'s canal. [c] | Lost Creek, a tributary of South Fork of Feather River. | In flume at dam above Pinkard Creek, intake SE. ¼ SE. ¼ Sec. 24, T. 20 N., R. 7 E., about 12 miles east of Enterprise, Cal. | [d] 1.31 | 20 |
| July 29, 1912 | do [c] | do | do | [d] 1.26 | 19 |
| Do | do [c] | do | do | [ed] 1.15 | 14 |
| Do | do [c] | do | do | [ed] .93 | 9.4 |
| Do | Pinkard Creek [c] | Lost Creek | In flume near mouth. Total flow turned into South Feather Land & Water Co.'s canal. | | 2.2 |
| Do | Oroleeve Creek [c] | South Fork of Feather River. | do | | 1.3 |
| Apr. 5, 1913 | Powell Creek | do | Mouth, 800 feet below U. S. Geological Survey gage on South Fork of Feather River at Enterprise, Cal. | | 33 |
| Apr. 18, 1913 | do | do | do | | [f] 2 |
| Aug. 18, 1913 | Upper Rock Creek ditch. | Rock Creek | Flume above ridge at Goodyear Bar, Cal. | | .7 |
| Do | Town ditch | do | Goodyear Bar, Cal | | .6 |
| June 26, 1913 | Rock Creek | Bear River | Ford on road Wheatland to Von Trent, a mile north of "McCourtney Crossing." | | Dry. |
| Feb. 26, 1913 | Seigler Creek | Cache Creek | Mouth, just above highway bridge, a mile north of Lower Lake, Cal., and U. S. Geological Survey gage on Cache Creek. | | 2.0 |
| Aug. 11, 1913 | do | do | do | | Dry. |

[a] Record furnished by Los Molinos Land Co., by T. H. Means, manager.

[b] The following gage heights were furnished during 1912–13 by the Los Molinos Land Co.:

| | *Feet.* |
|---|---|
| July 1, 1913 | 1.4 |
| July 7, 1913 | 1.05 |
| July 14, 1913 | 1.0 |
| Aug. 24, 1913 | 0.68 |
| Aug. 29, 1913 | 0.75 |

[c] Furnished by Irrigation Investigations, Department of Agriculture, Berkeley, Cal.

[d] Depth of water at lower end of flume.

[e] Depth regulated by headgate for this measurement.

[f] Estimated.

NOTE.—Report of the Conservation Commission of the State of California, 1912, p. 129, contains information regarding area served by South Feather Land & Water Co.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**Northern Pacific Ocean drainage basins.**

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Oct. 12, 1912 | Mattole River | Pacific Ocean | Below mouth of Bear Creek at Ettersburg, NW. ¼ sec. 7, T. 4 N., R. 2 E. | ..... | 17 |
| Mar. 20, 1913 | do | do | do | ..... | 154 |
| Sept. 4, 1913 | do | do | do | ..... | 40 |
| Oct. 12, 1912 | Bear Creek or West Fork. | Mattole River | Ettersburg at mouth, NW. ¼ sec. 7, T. 4 N., R. 2 E. | ..... | 9.7 |
| Mar. 20, 1913 | do | do | do | ..... | 42 |
| May 17, 1913 | do | do | do | ..... | 46 |
| Sept. 4, 1913 | do | do | do | ..... | 28 |
| Oct. 11, 1912 | Honey Dew Creek | do | Mouth near Upper Mattole, sec. 6, T. 3 S., R. 1 E. | ..... | 9.7 |
| Mar. 19, 1913 | do | do | do | ..... | 108 |
| May 16, 1913 | do | do | do | ..... | 48 |
| Sept. 3, 1913 | do | do | do | ..... | 27 |
| Oct. 11, 1912 | Squaw Creek | do | Mouth near Petrolia, sec. 30, T. 2 S., R. 1 W. | ..... | 5.4 |
| Sept. 3, 1913 | do | do | do | ..... | 11 |
| Oct. 10, 1912 | North Fork of Mattole River. | do | Mouth at Petrolia, NW. ¼ sec. 4, T. 2 S., R. 2 W. | ..... | 6.6 |
| Feb. 1, 1913 | do | do | do | ..... | 115 |
| Mar. 18, 1913 | do | do | do | ..... | 76 |
| May 14, 1913 | do | do | do | ..... | 84 |
| Sept. 2, 1913 | do | do | do | ..... | 4.3 |
| Oct. 10, 1912 | Bear River | Pacific Ocean | Highway bridge at Capetown, sec. 13, T. 1 N., R. 3 W. | ..... | 14 |
| Jan. 31, 1913 | do | do | do | ..... | 291 |
| Mar. 18, 1913 | do | do | do | ..... | 232 |
| May 14, 1913 | do | do | do | ..... | 188 |
| Sept. 2, 1913 | do | do | do | ..... | 4.3 |
| Dec. 20, 1912 | Williams Creek | Middle Eel River | Mouth near Covelo, one-half mile above U. S. Geological Survey gaging station on Middle Eel River, NW. ¼ sec. 31, T. 23 N., R. 11 W. | ..... | 121 |
| Dec. 22, 1912 | do | do | do | ..... | 78 |
| Mar. 25, 1913 | do | do | do | ..... | 63 |
| May 28, 1913 | do | do | do | ..... | 40 |
| Sept. 4, 1913 | Redwood Creek | South Fork of Eel River. | Highway bridge at Briceland, SW. ¼ sec. 18, T. 4 S., R. 3 E. | ..... | a .2 |
| Sept. 5, 1913 | Dean Creek | do | Highway bridge, 5 miles below Garberville, NW. ¼ sec. 12, T. 4 S., R. 3 E. | ..... | a .5 |
| Do | Chad Creek | Eel River | Highway bridge, a mile from Holmes, SE. ¼ sec. 32, T. 1 N., R. 1 E. | ..... | a 1 |
| Do | Bear Creek | do | Highway bridge, one-half mile above Pepperwood, NW. ¼ sec. 32, T. 1 N., R. 1 E. | ..... | a 1 |
| Aug. 28, 1913 | Grizzley Creek | Van Duzen River. | Highway bridge, near Cuddaback, NE. ¼ sec. 11, T. 1 N., R. 2 E. | ..... | a 1 |
| Do | Healy Creek | do | Highway bridge, near Cuddaback, NE. ¼ sec. 36, T. 2 N., R. 1 E. | ..... | a 1.5 |
| Do | Salmon Creek | do | Road crossing near Cuddaback, SW. ¼ sec. 22, T. 2 N., R. 1 E. | ..... | Dry. |
| Nov. 1, 1912 | North Fork of Mad River. | Mad River | Highway bridge at Korbel, sec. 33, T. 6 N., R. 2 E. | ..... | 24 |
| Jan. 18, 1913 | do | do | do | ..... | 1,050 |
| Apr. 16, 1913 | do | do | do | ..... | 154 |
| Sept. 9, 1913 | do | do | do | ..... | .8 |
| Oct. 31, 1912 | Minor Creek | Redwood Creek | Bairs ranch near Korbel, sec. 28, T. 7 N., R. 3E. | ..... | 6.6 |
| Jan. 19, 1913 | do | do | do | ..... | 275 |
| Mar. 1, 1913 | do | do | do | ..... | 19 |
| Apr. 17, 1913 | do | do | do | ..... | 50 |
| June 12, 1913 | do | do | do | ..... | 4.7 |
| Sept. 10, 1913 | do | do | do | ..... | .7 |
| Oct. 4, 1912 | Prairie Creek | do | Mouth 1½ miles above Orick, sec. 34, T. 11 N., R. 1 E. | ..... | 13 |
| Sept. 9, 1913 | East Fork of Scott River. | Scott River | 500 feet below highway bridge at Callahan, Cal., above junction with South Fork, SW. ¼ SW. ¼ sec. 16, T. 40 N., R. 8 W. (By wading.) | 5.13 | 8.2 |

*a* Estimated.

*Miscellaneous measurements for the year ending Sept. 30, 1913*—Continued.

**Northern Pacific Ocean drainage basins**—Continued.

| Date. | Stream. | Tributary to or diverts from— | Locality. | Gage height. | Discharge. |
|---|---|---|---|---|---|
| | | | | *Feet.* | *Sec.-ft.* |
| Nov. 15, 1912 | Wildcat Creek | Scott River | Mouth at Callahan, SE. ¼ sec. 17, T. 40 N., R. 8 W. | ..... | 8.7 |
| May 13, 1913 | ....do | ....do | ....do | ..... | 11 |
| July 3, 1913[a] | Klamath River | Klamath River | Highway bridge at Orleans, SW. ¼ sec 31, T. 1 N., R. 6 E. | 4.90 | 7,990 |
| Oct. 26, 1912 | Camp Creek | ....do | Highway bridge a mile below Orleans Bar, sec. 1, T. 10 N., R. 5 E. | ..... | 53 |
| Apr. 25, 1913 | ....do | ....do | ....do | ..... | 223 |
| Oct. 26, 1912 | Slate Creek | ....do | Highway bridge near Orleans Bar, sec. 18, T. 10 N., R. 5 E. | ..... | 19 |
| Do | Bluff Creek | ....do | One-half mile below highway bridge, 18 miles below Orleans Bar, sec. 30, T. 10 N., R. 5 E. (By wading.) | ..... | 302 |
| Sept. 24, 1913 | Trinity Farm & Cattle Co. ditch. | East Fork of Trinity River. | 3 miles from Trinity Center, 450 feet above road crossing opposite U. S. Geological Survey gaging station on river, sec. 15, T. 36 N., R. 7 W. | ..... | 6.8 |
| Apr. 30, 1913 | Madden Creek | South Fork of Trinity River. | Mouth near China Flat, sec. 15, T. 6 N., R. 5 E. | ..... | 73 |
| Sept. 13, 1913 | ....do | ....do | ....do | ..... | 7 |
| Oct. 28, 1912 | Willow Creek | Trinity River | Near mouth at China Flat, SE. ¼ sec. 29, T. 7 N., R. 5 E. | 2.83 | 25 |
| Jan. 22, 1913[b] | ....do | ....do | ....do | 4.42 | 389 |
| Mar. 3, 1913[b] | ....do | ....do | ....do | 3.50 | 144 |
| Apr. 18, 1913 | ....do | ....do | ....do | 3.80 | 207 |
| Apr. 30, 1913 | ....do | ....do | ....do | 3.45 | 112 |
| June 14, 1913 | ....do | ....do | ....do | 3.00 | 38 |
| Sept. 10, 1913 | ....do | ....do | ....do | 2.68 | 9.2 |
| Do | ....do | ....do | ....do | 2.68 | 9.1 |
| Sept. 13, 1913 | Campbell Creek | ....do | Highway bridge at mouth, 4 miles above Hoopa, sec. 6, T. 7 N., R. 5 E. | ..... | 2.2 |
| Sept. 12, 1913 | Hospital Creek | ....do | Highway bridge one-half mile above Hoopa, sec. 25, T. 8 N., R. 4 E. | ..... | Dry. |
| Oct. 23, 1912 | Supply Creek | ....do | Highway bridge at Hoopa, NW. ¼ sec. 25, T. 8 N., R. 4 E. | ..... | 14 |
| Oct. 30, 1912 | ....do | ....do | ....do | ..... | 22 |
| Jan. 21, 1913[a] | ....do | ....do | ....do | ..... | 236 |
| Jan. 24, 1913[a] | ....do | ....do | ....do | ..... | 123 |
| Mar. 2, 1913 | ....do | ....do | ....do | ..... | 52 |
| Mar. 5, 1913 | ....do | ....do | ....do | ..... | 45 |
| Apr. 18, 1913 | ....do | ....do | ....do | ..... | 73 |
| Apr. 21, 1913 | ....do | ....do | ....do | ..... | 62 |
| Apr. 27, 1913 | ....do | ....do | ....do | ..... | 44 |
| May 1, 1913 | ....do | ....do | ....do | ..... | 39 |
| June 13, 1913 | ....do | ....do | ....do | ..... | 13 |
| June 27, 1913 | ....do | ....do | ....do | ..... | 22 |
| Sept. 1, 1913 | ....do | ....do | ....do | ..... | 6.3 |
| Oct. 27, 1912 | Pine Creek | Klamath River | Trail crossing one-half mile above mouth, sec. 5, T. 9 N., R. 4 E. | ..... | 60 |
| Apr. 22, 1913 | ....do | ....do | ....do | ..... | 198 |

[a] Measurement made by Carl Langford, Orleans, Cal.
[b] Bridge measurement.

NOTE.—All measurements on Willow Creek reduced to datum of gage installed June 14, 1913.

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